Markhams farewell to

HVSBANDRY:

OR,

THE ENRICHING OF ALL

Sorts of Barren and Sterile Grounds in our Kingdome, to be as fruitfull in all manner of Graine, Pulſe and Graſſe, as the beſt grounds whatſoever:

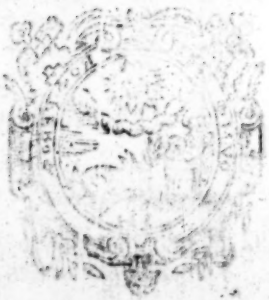
Together with the annoyances, and preſervation of all Graine and Seed, from one yeare to many yeares.

As alſo, a husbandly computation of Men and Cattels dayly Labours, their Expences, Charges, and utmoſt Profits.

Now newly the fourth time, reviſed, corrected, and amended, together with many new Additions, and cheape Experiments;

For the bettering of Arable, Paſture, and Woody Grounds: Of making good all Grounds againe, ſpoiled with overflowing of ſalt water by Sea-breaches; as alſo, the enriching of the ſtop-garden, and many other things never publiſhed before.

LONDON,
Printed by *William Wilſon*, for *John Hariſon*, in St. Pauls-Church-yard. 1649.



TO THE RIGHT WORSHIPFULL and his moſt worthy friend Mr *Bonham Norton* Eſq;

Worthy Sir.

Knowledge which is the divine mother of certaine Goodneſſe, never came unwelcome to a knowing Iudgement; no more I hope ſhall this my labour to your worthy Selfe, ſince doubtleſſe you ſhall find in it many things New, ſome things neceſſary, and nothing which hath not in it ſome particular touch of profit: It is a worke your former incouragements to my other labours did create in me; and the wants you worthily found, I hope ſhall bring you ſupplies both wholeſome and becoming. The experience I aſſure your Goodneſſe was the expence of a bitter and tedious Winter, but the con-

tentment (in gaining my wish) made it more pleasant than all the three other Seasons. What ever it be, it comes to you full of love, full of service. And since I know Vertue measureth all things by its own goodnesse; it is enough to me, that I know you are that Vertue. In you is power to judge, in you is Authority to exercise Mercy, let them both flye from your Goodnesse with that mildnesse, that in them my hopes may be crowned, and my selfe rest ever at your service,

GERVASE MARKHAM.

The

The Preface to the Reader.

Shewing the uſe, profit, and truth of the Worke.

THe *uſe and application of this Worke (gentle Reader) is to reduce the hard, Barren and Sterile grounds, ſuch as were never fruitfull, or ſuch as have beene fruitfull and are made barren by ill husbandry, to be generally as fruitfull as any ground whatſoever; from whence ſhall enſue theſe generall profits.*

Firſt, plenty of Corne and Pulſe, becauſe all grounds being made able and apt for tillage, the Kingdome may afford to ſowe for one buſhell that is now, hereafter five hundred, ſo mighty great are the unfruitfull waſts of Heathes, Downes, Mores, and ſuch like, which at this day lie unprofitably; & to this abundance of Corne will ariſe an equall abundance of Graſſe and Paſture: for as the beſt ground of the worſt, is to be converted to paſture, and the worſt to Tillage, ſo that worſt being tilled and dreſt, when it hath done bearing of Corne, (which will be in ſixe or ſeven yeares) ſhall for as many yeares more beare as good paſture either for breeding or feeding as can be required, and then being newly dreſt againe, ſhall newly flouriſh in its firſt profit. Secondly,

Secondly, whereas in fruitfull places the third or fourth part of all arable ground is lost in the fallow or tilth ground, now in these barren grounds you shall keepe no fallow field at all, but all shall bear either Corn or Grasse, that fallow part serving to pay for the charge bestowed on it and the rest.

Lastly, whereas in fertile grounds you cannot have either Wheat, Barley, or Rye, under two, three, foure, five, and sometimes sixe severall plowings, as fallowing in January *and* February, *Stirring in* Aprill *and* May, *Foiling in* July *and* August, *Winter ridging in* October *and* November, *and Sowing with other Ardors; now in these hard grounds restored you shall not plow above twice at the most, to the saving of the Husband-mans paines, his Cattels travell, and a larger limitation of time for other necessary businesses.*

For the truth of the Work he that will ride into the barren parts of Devonshire *or* Cornwall, *into the mountainous parts of* Wales, *into the hard parts of* Middlesex *or* Darby-shire, *or into the cold parts of* Northumberland, Cumberland, Westmoreland Lancashire, *or* Cheshire, *shall finde where industry is used, a full satisfaction for all that is here written.* Farewell.

Thine, G. M.

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MARKHAM, HIS Farewell to Husbandry.

CHAP. I.

The nature of Grounds in generall; But particularly of the barren and sterrile earth.

TO come to the full effect of my purpose without any preambulation, or satisfaction to the curious, for to the honestly vertuous are all mine endevors directed: you shall understand that it is meet that every Husbandman be skilful in the true knowledge of the natures of grounds; as which is fruitfull, which not: of which, in my first Bookes I have written sufficiently; nor doe I in this booke intend to write any ttitle that is in them contained; for I love not *Tautologie*, so I deadly hate to wrong my friend.

Grounds then, as I have formerly written in my first Bookes, being simple or compounded; as simple Clays, Sands, or Gravels together, may be all good, and all fit to bring forth increase, or all evill and barren, and unfit for profit: for every Earth, whether it bee simple or compounded, whether of it selfe or of double

mixture, doth participate wholly with the Clyme wherein it lieth; and as that is more hot, or more cold, more moyſt, or more dry, ſo is the earth evermore or leſſe fruitfull, yet for the better underſtanding of the plaine Countrey man, you ſhall know that both the fruitfull & unfruitfull Ground have their ſeverall faces and characters whereby they bee as well knowne as by the clime or ſituation of the continent; for that ground which though it beare not any extraordinary abundance of graſſe, yet will loade it ſelfe with ſtrong and luſty weedes, as Hemblockes, Dockes, Mallowes, Nettles, Ketlocks, and ſuch like, is undoubtedly a moſt rich and fruitfull ground for any graine whatſoever. Alſo, that ground which beareth Reede, Ruſhes, Clover, Daiſie, and ſuch like, is ever fruitfull in graſſe and Herbage, ſo that ſmall coſt and leſſe labour in ſuch grounds will ever make good the profit of the Husband man: But with theſe rich grounds at this time I have nothing to doe.

Knowledge of barren grounds.

To come downe then to the barren and unwholeſome Grounds, you ſhall underſtand that they are to be knowne three ſeverall wayes; firſt, by the Clyme and Continent wherein they lye; next, by their conſtitution and condition; and laſtly, by outward faces and Characters. By the Clyme and Continent, as when the ground lyes farre remote from the Sunne, or when it lyes mountainous and high, ſtony and rocky; or ſo neere unto the skirts and borders of the Sea, that the continuall Fogges, Stormes, Myſts, and ill Vapours ariſing from thence, doe poiſon and ſtarve the earth: all which are moſt apparent ſignes of barrennesſe. By the Conſtitution and Condition, as when the ground is either too extreamely cold and moyſt, or elſe too violently

violently hot and dry; either of which produceth much hardneſſe to bring forth, and ſheweth the earth ſo lying, to be good for little or no profit. By the outward Faces and Characters, as when you ſee (inſtead of Graſſe, which would be green, flowry, and thick growing) a pale thinne moſſie ſubſtance cover the earth, as moſt commonly is upon all high Plaines, Heathes, Downes, and ſuch like: or when you ſee the ground covered with Heath, Lyng, Broome, Braken, Gorſe, or ſuch like, they be moſt apparent ſignes of infinite great barrenneſſe, as may be ſeene in many Mores, Forreſts, and other wild and woody places. And of theſe unfertill places, you ſhall underſtand that it is the clay ground, which for the moſt part brings forth the Moſſe, the Broome, the Gorſe, and ſuch like: the Sand, which brinketh forth Brakes, Lyng, Heath; and the mixt earth, which utters Whinnes, Briars, and a world of ſuch like unnaturall and baſterdly Iſſues.

Thus having a true knowledge of the Nature and Condition of your ground, you ſhall then proceede to the ordering, earing, and dreſſing of the ſame, whereby it may not onely be purged and cleanſed from thoſe faults which hindred the increaſe thereof, but alſo ſo much bettered and refined, that the beſt ground may not boaſt of more ample increaſe, nor your more fruitfull placed neighbours exceede you in any thing, more then in a little eaſe.

Chap. 2.

Of the Ordering, Tilling, and Dreſſing of all ſorts of plaine barren Clayes, whether they be ſimple or compound.

THou whom it hath pleaſed God to place upon a barren & hard ſoyle, whoſe bread muſt evermore be grounded with ſweat and labour, that mayeſt nobly and victorioully boaſt the conqueſt of the Earth, having conquered Nature by altering Nature, and yet made Nature better then ſhe was before: thou I ſay that takeſt this honeſt delight in goodneſſe, hearken unto theſe following Precepts.

The firſt enriching of barren Grounds.

As ſoone as thou haſt well pondered and conſidered the nature of thy ground, and doſt find that it is altogether barren and unfruitfull, the clyme and condition not ſuffering it to bring forth any thing of worth or profit, and that thou haſt well weighed what manner of Earth it is, as that namely it is either a ſimple Clay, or a Clay ſo mixt with other earths, that yet notwithſtanding the Clay is ſtill moſt predominant, thou ſhall then ſelect or chuſe out of this earth ſo much as to thy ſelfe ſhall ſeeme convenient, it being anſwerable to the ſtrength of thy Teame, and the ability of thy purſe and labour to compaſſe; and this earth ſo choſen out, thou ſhalt about the beginning of *May*, in a faire ſeaſon, breake up with a ſtrong Plough, ſuch as is generally uſed in all ſtrong Clay grounds, the Share being rather long then broad, and the Colture rather ſomewhat bending then ſtreight and even, according as the nature of the ground ſhall require, which every ſimple Plough-man will ſoone finde out in turning up two or three furrowes; for according to the cutting of the earth

earth ſo muſt the Husbandman faſhion the temper of his plough.

Now for the manner of plowing this bad and barren earth, if the ground lye free from water (which commonly all evill barren earths do) you ſhall then throw downe your Furrows flat, and betwixt every Furrow you ſhall leave a baulke of earth halfe as broad as the Furrow, and ſo go over, and plow your whole earth up, without making any difference or diſtinction of lands: but if you feare any annoyance of water, then you ſhall lay your Furrows more high, neere, and cloſe together, dividing the grounds into ſeverall lands, and proportioning every land to lie the higheſt in the midſt, ſo that the water may have a deſcent or paſſage on either ſide. The manner of plowing.

Now ſo ſoone as you have thus plowed up your land, and turned all the ſwarth inward unto the earth, you ſhall then take Hacks of iron, well ſteeled and reaſonable ſharp, ſuch a competent number, as or your purſe or power can compaſſe, or the greatneſſe of your ground requireth, for you ſhall underſtand that one good hacker, being a luſty labourer, will at good eaſe hack or cut more than halfe an Acre of ground in a day; and with theſe Hacks you ſhall hew and cut to peeces, all the earth formerly plowed up, furrow by furrow, and not the furrows only, but alſo each ſeverall baulke that was left betweene, and any other greene ſwarth whatſoever the plow had eſcaped, and it ſhall be cut into as ſmall peeces as conveniently you can; for thereby is your mould made much more mellow and plentifull, and your Seed at ſuch time as it is to be caſt into the earth, a great deale the better and ſafer covered, and much more ſooner made to ſprout and bring forth Hacking of Ground.

encreaſe. Now for the ſhape and faſhion of theſe Hacks, you ſhall behold it in this Figure.

When you have thus hacked all your ground, and broke in peeces all hard cruſts and roughneſſe of the ſwarth, you ſhall then immediately, with all the convenient ſpeed you can (becauſe time is very precious in theſe labours) if you be neere unto any part of the Sea-coaſt, or to any other creeke or river, where the ſalt-water hath a continuall recourſe, thence fetch (either on horſe-back, or in Cart, or other Tumbrill, ſuch as the nature of the Countrey, or your own eaſe can afford) great ſtore of the ſalt ſand, and with it cover your ground which hath been formerly plowed and hackt, allowing unto every acre of ground, threeſcore or fourſcore full buſhells of ſand, which is a very good and competent proportion; and this ſand thus laid, ſhall be very well ſpread and mixed among the other hackt and broken earth. And herein it is to be noted, that not any other ſand but the ſalt is good or available for this purpoſe, becauſe it is the brine and ſaltneſſe of the ſame which breedeth this fertility and fruitfulneſſe in the earth, choaking the growth of all weeds and bad things which would ſprout from the earth, & giving ſtrength, vigour, and comfort to all kind of grain or pulſe, or any fruit of better nature.

Sanding of ground.

When you have thus ſanded your earth, you ſhall the

then if you have any Limeſtone about your grounds (as barren earths are ſeldome without) or if you have any quarries of ſtone (which are ſeldome unaccompanied with Lime-ſtone) gather ſuch Lime-ſtone together, and make a kilne in the moſt convenient place you have, as well for the carriage of the Lime, as for the gathering together of the ſtone, and having burnt your Lime, the manner whereof is ſo generally well known through the whole Kingdome, that in this place it needeth little or no repetition, you ſhall then on every Acre ſo formerly plowed, hackt, and ſanded, beſtow at leaſt forty, or elſe fifty buſhels of lime, ſpreading and mixing it exceeding well with the other ſand and earth; and herein is to be noted, that the ſtronger and ſharper the Lime is, the better the earth will be made thereby, and the greater encreaſe and profit will iſſue from the ſame; neither ſhall you need to reſpect the colour and complexion of the Lime, as whether it be purely white (as that which is made from Chaulke) or gray (as that which is made from the ſmall Lime-ſtone) or elſe blackiſh brown (as that which is made from the great ſtone and maine Quarry) ſince it is the ſtrength and goodneſſe of the Lime, not the beauty and colour which brings forth the profits. Liming of ground.

Now that this Lime is of excellent uſe and wonderfull profit, do but behold almoſt all the Countries of the Kingdome where there is any barrenneſſe, and you ſhall find and ſee how frequently Lime is uſed, in ſo much that of mine own knowledge in ſome Countries where (in times paſt) there was one Buſhell made or uſed, there is now many loads, and all riſen from the profitable experience which men have found in the ſame.

Manuring of Ground.

Now, when you have thus limed your ground, you shall then take of the best manure you have, as Oxe, Cow, or Horse-dung, Straw rotted, either by the littering of Beasts, or by casting upon High-waies, the mudd of Lakes, Ponds or Ditches; the soyle of young Cattell made in the Winter time by feeding at stand Heakes, or any such like kind of Ordure; and this manure or compasse, you shalt carry forth either on Horse-back, or in Carts or Tumbrels (according as the Countrey will afford) and you shall lay it and spread it upon your ground so formerly plowed, hakt, sanded, and limed, in very plentifull manner, so farre forth as your provision will extend: for it is to be understood, that barren and hard earths can never be over-laded with good manure or compasse, since it is only the want of warmth and fatnesse, which meanure breedeth, and causeth all manner of fruitfulnesse.

Times for all labours.

After you have thus manured al your ground, it is to be supposed that the season of the yeare will be well shot on, for the labour of sanding will take little lesse than two months, your ground being of any indifferent great quantity, except you have the assistance and help of many of your friends, which is a courtesie that every Husbandman may embrace, but not trust unto; for I would not wish any man that hath not Tenants to command, to presume on other friends, lest they faile him, and so his work lye halfe done, and halfe undone, which is a great Character of negligence and improvidence: but let every one proportion their labours according to their own strengths, and the number of their ordinary families. The liming of your ground will take at least halfe so much time as the sanding,

ſanding; and the manuring rather more than leſſe than the liming; ſo that by any reaſonable computation of time, beginning to plow your ground at the beginning of *May*, ere it be hackt, ſanded, limed, and meanured, *Michaelmas* will be come, which is the end of *September*; for I allow the month of *May* to plowing and hacking; *June* and *July* for ſanding; *Auguſt* for liming; and *September* for manuring. So then to proceed on with our labour, at *Michaelmas*, or from that time to the end of *October*, you ſhall begin to plow over that ground againe which formerly you had plowed, hackt, ſanded, limed and manured; and at this latter plowing, you ſhall plow the ground ſomewhat deeper than you did before; and taking a good ſtitch (as they call it in Husbandry) you ſhall be ſure to raiſe up the quick earth, which had not been ſtirred up with the plough before, making your furrows greater & deeper than formerly they were, and laying them cloſer and rounder together than they were before; and in this arder or latter earing, you ſhall be carefull to plow your ground as cleane as you can, without baulks or other eſcapes in Husbandry, and as you thus plow your ground, you ſhall have certaine Hackers, with their Hacks, to follow the Plow, and to cut the earth and furrows into very ſmall peeces, as was formerly ſhewed in the hacking and cutting of the firſt arder; then ſo ſoon as your ground is thus plowed and hackt, you ſhall take a paire or two of very ſtrong and good iron Harrowes, and with them you ſhall go over your ground, tearing that which was formerly plowed and hackt into more ſmall peeces than before, and raiſing up the mould in much greater abundance than was formerly ſeene: which work once finiſhed, you ſhall then

Second plowing.

Second hacking.

Firſt harrowing.

then take your Seed which would be the fineſt, cleaneſt, and beſt Wheat you can provide, and after the manner of good Husbandry, you ſhall ſow it on the ground very plentifully, not ſtarving the ground for want of Seed (which were a tyrannous penury) nor yet choaking it with too much (which is as laviſh a foolery) but giving it the full due, leave it to the earth and Gods bleſſing.

Of ſowing the Seed.

Now ſo ſoone as you have thus ſowen your Seed, forthwith you ſhall take all the Harrows again, harrowing the Seed into the earth, and covering it cloſe and well with all care and diligence; and in this latter harrowing, you ſhall have great reſpect to breake every clot as much as you can, and ſo ſtirre up and make as much mould as you can, and the finer ſuch mould is made, the better it is, ſo it cover deep and cloſe; for you ſhall underſtand, that all theſe kinds of barren Clayes are naturally tough, cold, and binding, whereby they ſtifle and choake any thing that growes within them; for the naturall toughneſſe of the earth will not give any thing leave to ſprout, or if it do ſprout, the binding nature thereof ſo fetters and locks it within the mould, that it cannot iſſue out, or if it do (with extreme ſtrugling) riſe through the pores of the ſame, yet doth the cold preſently ſtarve the root and make the ſtemme utterly unable to bring forth fruit, or any profit at all, ſo that if the toughneſſe be not converted to a gentle looſeneſſe and eaſie dividing of it ſelfe, the coldneſſe unto warmth, and the hard binding unto a ſoft liberty, there can be ſmall hope of commodity, which this manner of dreſſing the earth bringeth to paſſe; for the mixture of the ſand takes away the toughneſſe, the Lime brings heat, and the manure comfort and liberty: as

The ſecond harrowing.

Faults in the earth.

for

for the hacking and cutting the earth, that is to make all the reſt ſymbolize and mixe together: for as if any Diſpenſatory make a Medicine, and caſt his Ingredients confuſedly one upon another, without care of mixture, melting or diſſolution, ſhall find but a corrupt, diſorderly, and ill compounded receit; ſo he that dreſſeth and manureth his ground, and doth not by hacking, plowing, or ſome other Husbandly courſe, mixe the earth and the compaſſe perfectly well together, ſhall ſeldome find profit from his Seed, or find any man of wit deſirous to become his imitator. Now I muſt confeſſe, that ſome eaſie grounds of light and temperate nature, will mixe very well and ſufficiently by the help of the Plough only; but this barren hard earth of which I now write, muſt only be broken by this violent and extreme labour, or elſe there will neither be mould, earth, nor any other coverture for the Seed, but only foule, great and diſorderly clots and lumps, through which the graine can never paſſe, and that which lyeth uncovered will be made a prey to fowle and other vermine which will hourely deſtroy it.

After you have ſowen and harrowed the ground, you ſhall then ſee if there remaine any clots or hard lumps of earth unbroken, which the Teeth of the Harrows are not able to teare in peeces (as it is very likely you ſhall perceive many) for theſe hard barren earths which are plowed up in their greene ſwarthes, are nothing neere ſo eaſily broken and brought to mould, as are the mellow ſoft earths which have been formerly plowed many times before, becauſe the hard and intricate roots of the Graſſe, Moſſe, and other quick ſubſtances growing upon the ſame doth bind and hold the mould ſo cloſe and faſt together, beſides the natu-

Of cloſing Ground.

rall

rall ſtrength and hardneſſe of the earth, that without much induſtry and painful labour, it is poſſible to bring it to that fineneſſe of mould which Art and good Husbandry requireth; therefore as ſoon as you behold thoſe clots and lumps to lye undiſſevered and unbroken, you ſhall forthwith take good ſtrong clotting beetles, or maules made of hard and very ſound wood according to the proportion of this Figure.

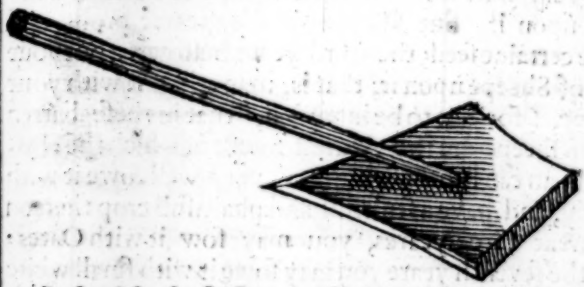
And with theſe maules or clotting beetles, you ſhall break all the hard clots and lumps of earth in pieces, even to ſo ſmall duſt as poſſibly you can; becauſe you are to preſuppoſe that theſe clots thus hard, tough, and unwilling to be with any meanes digeſted into mould, are either not at all, or elſe very inſufficiently mixed with the Sand, Lime, and other manures: and therefore you muſt rather break them, that thereby they may mix, and give eaſie paſſage to the Graine, and not like heavy poyſes and dead lumps lye and preſſe down the Seed ſo that it cannot ſprout.

Another manner of clotting.

But if it ſo fall out that partly by the hardneſſe of the ill earth, partly through the ſeaſon and dryneſſe of the yeare, that theſe clots and lumps of earth will either not be broken at all, or at leaſt ſo inſufficiently that the mould will not be any thing neere ſo fine as you would have it; you ſhall then having done your beſt endeavor,

let

let your ground reſt till there have falne a good round ſhower or two of raine, which may wet the clots through and through; and then the next faire blaſt, you ſhall take your clotting beetles, but not thoſe which you tooke before in the dry ſeaſon, but ſome much lighter, broader and flatter, being made of thick Aſh-boords more then a foot ſquare, and above two inches in thickneſſe, according to this figure.



And with theſe flat maules and beetles, you ſhall breake all the unbroken clots and lumps of earth which ſhall trouble or annoy your ground, making your Lands as plaine and ſmooth as is poſſible, ſo that the graine may have eaſie paſſage forth; which labour as ſoone as you have finiſhed, you ſhall then referre the increaſe and proſperity thereof unto the mercies of God, who no doubt will give his bleſſings according to thy labour and thanfulneſſe.

As touching the trimming and weeding of this Corne, after it is ſprung a foot above the earth, or thereabouts, you ſhall underſtand, that theſe hard barren grounds are very ſeldome troubled with weeds; for weeds, eſpecially great, ſtrong, and offenſive weeds are the iſſues of rich and fertile ſoyles; yet, if through the trimming Of weeding.

trimming and making of this earth (which is not commonly ſeene) you doe perceive any ſtore of thyſtles, or other groſſer weeds to ſpring up, you ſhall then in the moneth of *May*, with hookes, nippers, and ſuch like tooles, cut them away or pull them up by the rootes, which indeed is the better manner of weeding.

Severall ſeedes ſeverall yeares

Now here is to be underſtood, that your ground being thus dreſſed and trimmed as is before ſhewed, you may very well for the two firſt yeares ſowe Wheate or Rye upon it, but Wheate is the greater profit and more certaine ſeed; the third yeere beſtowing but your fold of Sheepe upon it, that is, manuring it with your ſheepe, (for it is to be intended, that in theſe barren earths ſheepe are the greateſt ſtocke of which the Husbandman can boaſt) you may very well ſowe it with barely, and have a fruitfull and plentifull crop thereon the next three yeares, you may ſow it with Oates; and the ſeventh yeare you may ſowe it with ſmall white Garden Peaſe or Beanes, according as you ſhall finde the ſtrength and goodneſſe of the ground, (for Beanes deſire ſomewhat a richer ſoyle then the Peaſe) then for three or foure yeares following the ſeven, you may let it lie at reſt for graſſe, and doubtleſſe it will yeeld you either as good paſture, or as good Medow as you can reaſonably require. And then after the expence of this time, it ſhall bee good that you dreſſe and order your ground againe in ſuch ſort as was formerly declared; and thus you may every yeare dreſſe one or other piece of ground, till you have gone over all your ground, or at leaſt as much as you ſhall thinke expedient; and without faile, he that is Maſter of the moſt fruitfulleſt and richeſt ſoyle, ſhall not boaſt of any greater increaſe then you ſhall, onely your charge

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may be a little more, and ſo ſhall be alſo your commodity, which ſhall make an amends for your charge; as for your toyles, yours ſhall be much the leſſe, by a juſt computation; for though you have many labours, yet they are but Summer labours, and neither hurt your owne body, nor your Cattell: whereas the Maſter of the rich ſoile is in continuall worke both Winter and Summer, labouring twice ſo much to confound the ſuperfluous growth of weeds as you doe to beget the increaſe of Corne; and whereas he muſt ever keepe a third or fourth part of his Corne-ground without fruit, you ſhall not keepe any which ſhall not yeeld you a ſufficient commodity.

Now me thinkes I heare in this place, to be objected unto me, that whereas I doe preſcribe the ſanding of theſe barren Earths with the ſalt Sea-ſand, and no other (as it is true, for all other freſh ſand is unavaileable) what if the ground doe lie ſo farre within the Land, that there is no ſalt ſand within many ſcore miles of it, how then ſhall I make good my barren earth; ſure to fetch ſand ſo farre, will never equall the coſt, or it may be this experience hath no further limits then to ſuch hard and barren earths as lye alongſt the Sea-coſt onely. Objection.

To this I anſwere, that al-be this ſalt Sea-ſand be of infinite good and neceſſarie uſe, inriching grounds wonderfully much, yet is not this experience of battering of barren ſoiles, ſo ſtrictly bound thereunto, but that without any uſe of the ſame, you may make your earth as fruitfull in Corne or Graſſe, as hath beene already formerly declared. Anſwer.

Therefore if your ground lye much within the Land, and farre from the Sea, ſo that this commodity,

of

Ordering Earth where ſands wanteth.

of ſand is not by any poſſible meanes to be gotten, then you ſhall (having firſt lookt into the nature of your ground, and finding it to be by all characters and faces a cold, barren, ſtiffe, dry Clay, yeelding nothing but a ſhort moſſie graſſe, without any other burthen at all as is ſeen upon moſt Plaines, and Downes of this Kingdom) firſt plow it and hacke it as was before ſhewed in the former part of this Chapter, then in ſtead of ſanding it, you ſhall lime it as aforeſaid, or rather a little more plentifully, then you ſhall manure it, after (as at ſeed time) you ſhall plow it and hack it againe, then harrow it as before ſaid; then to every aker of ground, you ſhall take two buſhels of very dry bayſalt, and in ſuch manner as you ſowe your Wheate, you ſhall ſowe this ſalt upon the ground, then immediately after the ſowing of the ſalt, you ſhall ſowe your Wheat, which Wheate would be thus prepared before you ſow it; the day before you are to ſowe your graine, you ſhall take Bay ſalt and water, and mixing them together make a brine ſo ſtrong that it will beare an egge, then put the Wheate you are to ſowe into that brine, and let it ſteepe therein till the next day, then draine it as clean as may bee from the brine, and ſo ſow it, harrow it, clot it, and weede it, as was before declared, and no doubt but you ſhall finde a marvailous great increaſe thereby: for this I can aſſure you, both from a moſt certaine knowledge, and a moſt worthy relation, that a gentleman buying ſome ſtore of ſeed-Wheate, and inforſt to bring it home by Sea, by ſome caſuall meanes ſome of the ſacks at the unlading, fell into the Sea, and were much drencht in the ſalt-water, whereat the Gentleman being grieved (as doubting ſome hurt to come to the ſeed) yet inforſt of neceſſity

Sowing of Salt.

The excellency of Salt.

to make uſe thereof, cauſed all the Wheat which was ſo wet to be ſown by it ſelfe in a particular place, and upon the worſt ground which he had, (as much diſpairing in the increaſe thereof) and it is moſt infallibly true, that of that wet Seed, he received at leaſt five-fold more profit than of any other, and from thence it came, that this experiment of Brine and the ſowing of ſalt hath taken place; from which the painfull husbandman hath found ſuch infinite increaſe to ariſe, that the uſe thereof will never be layed down in this Kingdome. Neither is the thing it ſelfe without good and ſtrong probability of much increaſe and ſtrength for the bettering of all manner of arable grounds; for there is nothing which killeth weeds, quicks, and other offences of the ground ſo much as ſaltneſſe: for what makes your Pigeons dung and your Pullens dung to be better for arable grounds than any other dung or manure whatſoever, but by reaſon of the ſaltneſſe thereof? by which ſaltneſſe alſo, you may judge the ſtrength and heat thereof, inſomuch that the proper taſte of fire, or any hot thing is ever ſalt; alſo we ſay in Philoſophy, that bloud which carrieth the vitall heat and warmth of the body is in taſte ſalt, and ſo a nouriſher, maintainer, and increaſer of all the ſtrength and vigour of the inward faculties; whereas Flegme, Choler, and Melancholly, which are the hurts and confounders of the vitall ſpirits, the firſt is in taſte ſweet, the ſecond bitter, and the laſt of an earthy and dry taſte, full of much loathſomeneſſe.

Now againe you ſhall underſtand, that as you thus wet or ſteepe your Wheat ſeed, ſo you may alſo ſteepe any other Seed, as Barley, Oates, Beanes, Peaſe, Lupins, Fetches, Of ſteeping Seed in brine.

Fetches, and ſuch like; of which your Beanes, Peaſe and Lupins, you may ſteep more than any of the reſt, and yout Oates the leaſt.

As touching Rye, it ſhall be good not to ſteep it all, for it is a great enemy to all manner of wet and moyſture, inſomuch, that the curious Husbandman will forbeare to ſow it in any great ſhower of raine, bearing in his mind this ancient addage or ſaying, that *Rye will drowned in the Hopper*; as on the contrary part, *Wheat would be ſown ſo moyſt, that it might ſtick to the Hopper*: yet notwithſtanding, when you do ſow Rye in any of theſe In-land and cold barren Countries, where ſand is not to be gotten, you ſhall not by any meanes omit the ſowing of your ſalt before, for it is nothing neere ſo moyſt as it is warm and comfortable.

Chap. 3.

Of the ordering, Tylling, and Dreſſing of all rough Barren Clayes, whether ſimple or compound, being laden and over-run with Gorſe, Broome, and ſuch like.

NExt unto theſe plaine barren earths, which by reaſon of their heights, are ſubject in the Winter time to all manner of cold, froſts, ſtormes, tempeſts, blaſts, and winds, which are the perfect hinderers of all encreaſe and growth; and in the Summer time to all hot ſcorchings, ſcaldings, and fiery reflections of the Sun, which on the contrary part, burneth and withereth away, that little ſeeming encreaſe which appeareth above the earth; I will place that barren clay, whether it be mixt or unmixt, which lying not ſo high, and being ſubject unto thoſe hurts and offences, ſeemeth to

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be a little more fruitfull, yet either by the extreme cold moyſture thereof, or the ſtony hardneſſe, and other malignant qualities, is no leſſe barren than that of which I have formerly written, which indeed is that barren and vild ſoyle, which will neither beare corne nor graſſe, but is only over-run and quite covered over with great, thick, and tall buſhes of Gorſe or Furs, which is a moſt ſharpe, woody, and groſſe weed, ſo full of pricks, that neither Horſe, Beaſt, Sheepe, nor Goates, dare thruſt their noſes to the ground to gather up that little poore graſſe which groweth thereon: And albeit theſe Gorſe or Furs, are one way a little commodity to the needfull Husbandman, in being a reaſonable good fuell, either for baking, brewing, or divers other ſudden and neceſſary uſes; yet, in as much as the profit being compared with the great quantity of earth which they cover and deſtroy, and which with good Husbandry might be brought to great fruitfulneſſe, is indeed no profit at all; it ſhall not be amiſſe for every good Husbandman that is peſterd and over-laden with ſuch ground, to ſeek by way of good Husbandry how to reduce and bring it to that perfection and excellency which may be beſt for his own particular commodity, and the generall good of the Kingdome wherein he liveth.

Then is there another kind of ſoyle which is nothing at all differing from this, but is every way as barren and ſterile, which is that ground which is over-run with broome (which is as noyſome a weed as the former) and though it have not ſuch ſharp prickles as the other, whereby to hinder the grazing of Cattell, yet doth it grow ſo cloſe and thick together, and is naturally ſo poyſonous and offenſive to graſſe, that you ſhall ſel-

dome ſee any grow where this Broome proſpereth; beſides the bitterneſſe thereof is ſo unpleaſant and diſtaſtfull to all kind of cattell, that not any will ever crop or bite upon the ſame, only it is of ſome neceſſary uſe for the poore husbandman, in reſpect that it ſerveth him both for fuell, for thatching and the covering of his houſes, (being for that purpoſe, of all, the longeſt laſting) and alſo for the making of Beeſomes for clenſing of the houſe and barnes, or elſe for ſale and commodity in the market; all which profits (as before I ſaid) being compared with the loſſe of the ground, and the goodneſſe that might be reaped from the ſame, are indeed truly no profits but hinderances.

Therefore I would wiſh every man that is Maſter of ſuch grounds, whether they be overrun with Gorſe, Furs, Broome, or any ſuch kind of groſſe, woody, or ſubſtantiall weed, firſt, to cut up the weed (of what ſort ſoever it be, whether Gorſe, Furs, or Broome) as cloſe and neere unto the ground as you can poſſibly, and then making them up into ſheafes or bigge faggots, carry them home and ſtack them up very dry, ſo as no raine may enter or pierce into them, for the ſmaleſt wet will rot and conſume them to dirt and filthineſſe; which done, you ſhall make Labourers with hacks, picks, and ſuch like tooles, to ſtub up all the roots which you left in the ground, even to the very bottome of the ſame; and theſe roots you ſhall be very carefull to have ſtubbed up exceeding cleane, by no meanes leaving (ſo neere as you can) any part or parcell of the roots behind you; then thoſe roots thus ſtubbed up, you ſhall diligently gather together into little heapes as bigge as Moule-

Deſtroying of weeds.

hills,

hills, and place them upon the ground a pretty distance one from another, and so let them lye till the Sunne and winde have dryed them: for it is to bee intended, that this labour must begin about the latter end of *April*, and beginning of *May*.

Burning of baire.

Then so soone as you find these rootes are thorowly dried, you shall pile them handsomely together, laying them a little hollow one from another, and then with a hacke cut up some of the same earth, and therewithall cover all the rootes quite over, onely leaving a vent hole at the top, and on one side, and so let the hills rest two or three dayes, till the earth bee a little parcht and dried, then take fire and some other light dry fuell which is aptest to blaze, and with the same kindle every hill, not leaving them till you see them perfectly on fire: which done, let them burne both day and night, till the substance being wholly consumed, the fire go out of it owne selfe, and this in some Countries is called the *Burning of Baite*.

Breaking of the burnt earth

Now as soone as the fire hath beene extinguished for two or three dayes, you shall then come, and with shovels (and beetles to breake the hard burnt earth in peeces) you shall spread all the ashes cleane over the ground; which done, you shall with a very long plow teare up the earth into great and deep furrowes, and divide it into Lands, as you shall thinke meete and convenient, laying them higher or flatter, as you shall have occasion, and as the ground will yeeld more or lesse within the daunger of water, whether it bee the over-flowing of some neere neighbouring Brookes or Rivers, or else other standing Water occasioned by Raine and extraordinary Showers, which must be carefully looked unto, because all over-flowes and inundati-

Causes of unfruitfulnesse.

Causes of unfruitfulnesse.

on of water, is a mighty destroyer and consumer of graine: but these barren grounds of which I now write, are very seldome oppreſt with water; for most commonly they lie so high, that the continuall dryneſſe thereof, is a ſtrong occaſion of the much unfruitfulneſſe. After you have thus burnt your baite, and plowed up your ground; you ſhall then with your hackes hacke it into ſmall pieces, in ſuch manner as was declared in the former Chapter; then you ſhall (if the Sea be any thing neere you) ſand it with ſalt ſand (as before ſhid) then lime it, and after, manure it either with Oxe dung, Horſe dung, rotten Straw, mudde of Ponds and Ditches, the ſpreeling of Houſe-floores, or ſweepings of Channels and Streets, or ſuch like, or for want of all theſe in caſe you dwell neere unto the Sea-coaſt (where manure for the moſt part is in greateſt ſcarcity, and the hardeſt to be come by) you ſhall gather from the bottome of the rockes (where the ſeydge of the Sea continually beateth) a certaine blacke weede, which they call Hempe-weede, having great broad leaves, and growing in great abundance, in thicke tufts, and hanging together like Peaſe-ſtraw; and with theſe weedes, you ſhall cover your lands all over of a pretty good thickneſſe, and then forthwith you ſhall plow it againe ſomewhat deeper, and with ſomewhat greater furrowes then before, raiſing up the new quicke earth to interminglo and mixe with thoſe manures and helpe which you had formerly prepared and laid upon the ground; then ſhall you againe hacke it and harrow it; then ſhall you take Pigeons dung or Pullens dung (that is, any kind of land fowle whatſoever, but by no meanes any water-fowle) or Pigeons dung and Pullens dung mixt together, and al-

An excellent manure.

Of Plowing.

Of divers manures.

lowing

lowing to every aker two or three bushels thereof, which is the true quantity of seed proportioned for the same, and this dung being broken and masht into small pieces, you shall put into your Sydlop or Hopper, and in the same manner as you sow your corne, you shall sowe this dung upon the ground, and then immediatly after it you shall sowe your Wheat, either steept in brine, or else salt Sea-water, or unsteept, as you shall think good, but in case you can neither get salt sand nor Sea-Rocke-weedes, then you shall by no meanes omit the steeping of your Seede; neither shall you faile before you sowe your Seede, to mixe with your Pigeons and Pullens dung, a full equall part of Bay-salt well dried and broke, and so sowen with the dung upon the land, and then the seede after it; which done, you shall harrow it againe, clot it, sleight it, and smooth it, in such sort as was formerly declared in the former Chapter, for these labours have no alterations, but must in all points bee done as was before set downe. Mixture of manures.

Now touching the weeding of this earth, after the Corne beginneth to grow above the ground, there is no feare to be had either of Thistles, Tares, Cockles, Darnell, Docks, and such like strong weeds, which indeed are the issues of good grounds ill ordered and handled: but the weeds which you shall most feare in this place, is young Gorse, or Furs, or els young Broome, which are very apt to grow from the least part or parcell of roots that shall be left behind; nay the very nature of those barren earths is such, that of its owne accord it will bring forth those weedes, the cold sharpenesse of the ayre mixing with the sterility & coughnesse of the earth, being the cause that it will give Of weeding.

life to no other better plants; therefore ſo ſoone as you ſhall behold any of them to appeare above the earth, though they be not halfe a finger high, you ſhall preſently with all diligence, pull them up by the roots and caſt them away, or lay them in heapes that they may be afterwards burnt, and the aſhes ſprinkled upon the ground: and herein is to be obſerved, that the younger and the ſooner that you do pull up theſe weedes, the better it is, and the eaſilier they will come from the earth, and the ſooner be deſtroyed: for all thoſe mixtures wherewith already you have beene taught to mixe your earth, are in themſelves ſuch naturall enemies to all theſe kind of barren weeds, that ſhould you omit the manuall labour of deſtroying them (which no good husband willingly will do) yet in time the earth of it ſelfe, and the often plowing of the ſame would leave no ſuch offence of weeds or other growths which might hinder the Corne.

Time for weeding.

Now touching the beſt time when to pull away theſe weeds, though generally it muſt bee done aſſoone as they doe appeare above the ground; yet it ſhall not bee amiſſe for you to deferre the worke till after a ſhower of raine, and then immediately after the ground is wet (and ſo by that meanes more apt and willing to open and forſake the roots faſtned within it) you ſhall with all diligence pull them out of the ground, and deſtroy them: neither ſhall you pull them out of the ground with you hands onely; for the Gorſe have exceeding ſharpe pricks, ſo that with your naked hands you are not able to touch them, and to arme your hands, againſt them, with ſtrong thicke gloves, would be to boiſtrous and combersome, ſo that ſometimes you might either miſſe the weedes, and pull up the Corne;

Corne: or elſe pull up the Corne and weeds both together; therefore to prevent all theſe caſualties or hinderances, you ſhall take a paire of long ſmall wooden Nippers, made after the forme of this figure.

And with theſe you ſhall pull the weeds out of the ground, and caſt them into the furrowes by the ſides of the Lands, till your dayes worke be finiſhed, and then with a rake you ſhall rake them together, and ſo lay them in heapes, to dry and whither, in more convenient places, that when time ſhall ſerve, you may burne them, and uſe them, as was before declared.

Gathering of ſtones.

Laſtly you ſhall have great reſpect, that if this ground be very much troubled with looſe ſtones, as flint, pibble, and ſuch like, that then you very carefully get them gathered from the ground, both before and after you have plowed it, and to lay them on heapes in other vacant places, where they may ſerve for pavings, and ſuch like purpoſes when time requireth: but if the ground be over-run with great or elſe ſmall lime-ſtones, as for the moſt part theſe barren grounds are; then ſhall you with all care gather them up, and lay them in great heaps in ſome corner of your field where you may make a convenient lime-kilne, and ſo there burne theſe ſtones thus gathered, which will be both an infinit profit, and an infinit eaſe to the reſt of your labours.

CHAP.

Chap. 4.

Of the ordering, Tilling, and dreſſing of all rough barren Clayes, whether ſimple or compound, that are over-runne with Whinnes, and ſuch like.

NExt unto this barren Claye which is over-runne with Furres, Broome, and ſuch like, I will place that barren and unfertile earth, being alſo a Claye, whither ſimple or compound, which is over-runne onely with Whinnes, and indeede bearing little or no other burthen, or if it doe beare any other burthen, as ſome little ſhort moſſie graſſe, yet is that graſſe ſo covered over with theſe ſharpe Whinnes, that not any beaſt dare put his noſe to the ground, or bite upon the ſame; and indeed, this kinde of earth is not any whit at all leſſe barren then thoſe of which I have already written, but rather more, in that the malignant qualities thereof are not ſo ſoone corrected, nor yet the vertues ſo ſoone reſtored.

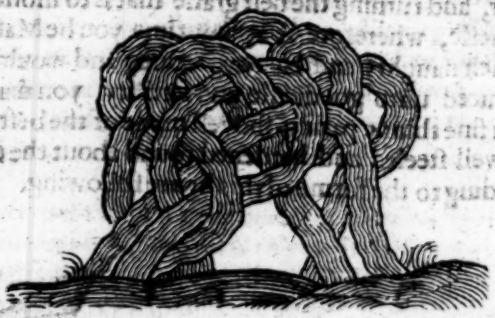
What whinnes are.

Whinnes are a certaine kinde of rough dry weedes, which growe buſhie and thicke together, very ſhort and cloſe unto the ground, being of a darke browne colour, and of crooked growth, thicke and confuſed, and full of knots, and thoſe knots armed with hard, long, ſharpe prickes, like thornes or bryars, they have little browne leaves which ſhaddow the prickes, and doe winde their branches ſo one into another, that they can hardly be ſeparated, yet is their growth at any time little more then a handfull above the earth, onely they ſpread exceedingly, and will runne and cover over a whole field, choaking up all ſorts of good plants whatſoever,

ſoever, and turning the beſt graſſe that is to moſſe, and filthineſſe, wherefore if at any time you be Maſter of any ſuch naughty and barren ground, and would have it reduced unto goodneſſe and fertility, you ſhall firſt take a fine thinne paring-ſhovell made of the beſt yron, and well ſteeled and hardened round about the edges, according to the forme of this figure following.

And with this paring-ſhovell, you ſhall firſt pare up all the upper ſwarth of the ground, about two inches, or an inch and a halfe thicke at the leaſt, and every paring would be ſome three foote in length at the leaſt, and ſo broad as the ſhovell will conveniently give it leave, and this ſwarth thus pared up, you ſhall firſt turne the Whinny or graſſe ſide downeward, and the earth ſide upward, and ſo let it lye two or three dayes in the Sunne to dry (for this worke is intended to beginne in the moneth of *May*) and when that ſide is well dried, you ſhall turne the other ſide, and dry it alſo, then when all the ſwarth is dryed, you ſhall gather ſixe or ſeven peeces together, and turning the Whinny or graſſe ſide inward, and the earth ſide outward, you ſhall make round hollow little hils thereof, much what according to the faſhion of this figure following.

And



And the inward hollowneſſe like unto the hollowneſſe of an Oven, but much leſſe in compaſſe, which done, you ſhall fill the hollowneſſe with dry chips, or ſmall ſtickes, or Furres and Straw mixed together, which you ſhall put in at the vent-hole which ſhall be left on one ſide of the hill, and kindling it with fire, you ſhall burne all that ſwarth in ſuch ſort as you burnt the rootes of your Furres and Broome before; for this is alſo called a burning of Baite, as well as the former; for it is a moſt principall nouriſher of the earth, and a very ſudden deſtroyer of all malignant weedes whatſoever.

Breaking of Baites.

After the burning of your hills, as ſoone as the fire is utterly quenched and gone out, and no heate at all left in the hills; you ſhall then with clouting beetles beate them all downe to duſt, and then with ſhovels you ſhall ſpread the aſhes quite over all the ground, as was before declared in the former Chapter: and herein is to be noted, that you muſt place theſe hills as thick and cloſe together as by any meanes poſſibly you can, making your hills ſo much the leſſe and lower, that

that they may ſtand thicker and neerer together, and ſo cover more ground, and thereby the heat and ſtrength of the fire to diſperſe it ſelf over all that piece of ground; for the fire burning upon the earth, doth as much good for the enriching of the earth, and deſtroying of the weeds, as the aſhes doth which are ſpread upon the ſame.

Now after your baite is in this manner burned and ſpread, you ſhall then (as was before ſhewed) plow up your ground in good large furrows, then hack it very ſmall, Sand it, Lime it, and manure it; and of all manures, there is not any better for this ground than Oxe-dung and aſhes well mixt together; of which aſhes, thoſe of Beane ſtraw, Peaſe-ſtraw, or any other ſtraw are beſt; and thoſe of Wood or Ferne next, thoſe of Charcoale next, and thoſe of Sea-coale or Pit-coale are the worſt of all: Swines dung is not much amiſſe for this ground; for though it be a great breeder of weeds and thiſtles in good and fertile grounds, yet in this cold hard and barren earth it worketh no ſuch effect, but is a great comforter, and warme moyſtner of the ſame. Plowing.

After you have thus made your ground; as ſoone as Wheat ſeed-time commeth, which is the latter end of *September*, and beginning of *October*, you ſhall then with great care plow over your ground againe, and take great reſpect that you turne up your furrows much deeper than before, and that for two eſpeciall cauſes; the firſt, that the new earth may the better mixe with the old earth, and thoſe helps that are added thereunto; and ſecondly, that you may be ſurer to teare up the roots of all the Whins from the very bottome of the earth, not ſuffering any part of them to remaine behind,

behind: and for this purpoſe it ſhall not be amiſſe to have an idle Boy or two to follow your Plow, and to gather away all the roots that ſhall be torne up, or any way elſe left bare above ground, which roots ſhall be laid on heaps in convenient places, and then after burnt, and the aſhes thereof ſpread upon the ground, which will be a very great comfort unto the ſeed, being a ſpeedy help unto the ſprouting thereof, and a very warme comforter of the root after the ſtemme is ſpindled above ground, for in theſe cold barren earths, nothing doth ſo much ſpoyle and ſlay Corne, as the dead coldneſſe which lyeth at the root thereof; for in many of theſe unfertill places, you ſhall ſee Corne at the firſt ſowing (whileſt there is a little ſtrength in the ground) ſprout in great abundance, promiſing much hope of the profit; but when it ſhould ſpindle and come to much better perfection, that poore ſtrength being ſpent and conſumed, and the cold and dryneſſe of the ſoyle, having as it were overcome all matter of comfort, then preſently you ſhall ſee the blade of the Corne turne yellow, the ſtem or ſtalke to wither, and either put forth no eare at all, or elſe a very poore little empty one, being laden with nothing but a moſt dry chaffie huske without ſubſtance. But to come againe to our purpoſe, after you have thus plowed up your ground the ſecond time, you ſhall then hack it againe, and harrow it, as was declared in the other former Chapters; then you ſhall take your ſeed-wheat which hath been ſteept either in brine or Sea water, and to every buſhell of that Seed you ſhall adde a buſhell of Bay ſalt, and mixe them very well together in your Hopper or Sydlop, and ſo ſow them together upon the ground, obſerving

ſerving to double your caſts ſo oft, that you may not faile to caſt that true quantity of ſeed into the earth which otherwiſe you would have done if ſo be there had been no mixture at all, for to do otherwiſe were to deceive the ground, and a handfull of ſeed ſo ſaved would be the loſſe of a peck in the time of Harveſt; therefore have great reſpect that your ground have his due, for it is no more coſt though it be a little labour.

When your ſeed is ſown, you ſhall harrow it againe the ſecond time, clot it, ſmooth it and ſleight it, as was before declared in the former Chapters. Harrowing.

As touching the weeding of this ground, it is the leaſt labour of all other, for the earth being ſo corrected as is before ſhewd, it will naturally of it ſelfe put forth no weeds, eſpecially if you remember to plow it deep, and be ſure to teare up and gather away all the quick roots, otherwiſe if that labour be any thing neglected, then wil it put forth both Whins, and great ſtore of other rough weeds, which as ſoone as you ſhall perceive to appeare, you ſhall preſently with your wooden Nippers pull them up by the roots, as was at large declared in the foregoing Chapter. Weeding.

Now for the generall profit of this ground thus made and prepared, it is the ſame that the two former are, that is to ſay, it will beare you good and ſufficient Wheat, in plentifull abundance for the ſpace of two or three years, then Barley a yeare after; then Oates three yeares together after the Barley; and Peaſe or Beanes a yeare after the Oates; then laſtly very good Meadow or Paſture, for the ſpace of three or foure yeares after, and then you ſhall begin and dreſſe it againe, as was formerly declared. Profits.

CHAP.

CHAP. 5.

Of the ordering, Tilling, and Dreſſing of all barren Claies, whether ſimple or elſe compound, which are over-run with Ling, or Heath.

THere followeth now ſucceſſively, another ſort of barren earth, which indeed is much more ſterile and barren than any of the other formerly written upon: becauſe they, out of their own natures, do beare a certaine kind of graſſe or food which will relieve ordinary hard ſtore-cattell, whether it be Sheepe, Goates, or young Beaſts; But this earth of which I am now to entreate beareth no graſſe at all, but only a wild filthy black brown weed, which we call Ling or Heath, the tender tops whereof Cattell and wild Deere will ſometimes crop, yet it is to them but little reliefe, and only maintaineth life and no more. Now albeit ſome may object unto me, that this kind of ſoyle is ever a ſandy ſoyle and no clay, as may be ſeen in moſt Chaſes, Forreſts, and Downes: yet I anſwer, that albe it hold ſo in generall; yet there are divers clayes, eſpecially in mountainous Countries, that are peſtered with theſe kind of weeds, as may be ſeen in the North and North-weſt parts of *Devonſhire*, in ſome parts of *Cornewall*, and in many parts both of North and South *Wales*; and theſe clay grounds which are thus offended with theſe weeds of Ling or Heath, are much more barren and unfruitfull than the ſands, becauſe of their much more coldneſſe; yet thoſe clayes which are mixed with either black Sand, dun Sand, or yellow Sand and over-run thus with Heath or Ling, are the moſt barren of all: to make any further deſcription of this Heath

Heath or Lyng, being a thing ſo notoriouſly knowne ouer all this Kingdome, I hold it meerely needleſſe, onely to ſay it is a rough brown weede, ſhooting out abundance of ſtalkes from one root, with little darke leaues, and flowers on the toppe, of a pale reddiſh colour, much inclining unto Peach colour at the firſt, but being full blowne, they are then a little more whitiſh.

You therefore that haue any ſuch ground, and deſire to bring it to fruitfulneſſe, and the bearing of good corne and graſſe in a reaſonable abundance, you ſhall firſt with ſythes or ſharpe hookes (but old ſythes are the better) cut downe all the Heath, or Lyng, which groweth upon the earth you intend to conuert to goodnes, ſo neere the ground as poſſibly you can; then when it is cut downe (which would euer be at the beginning of the Moneth of *May*) you ſhall let it lye upon the ground, daily toſſing and turning it till it become very dry, then ſpreading it all ouer the ground, and mixing or couering it with dry ſtraw of any kinde whatſoeuer, you ſhall preſently ſet it on fire in ſo many ſeuerall corners of the field, that all the ſeuerall fires in the end may meete in one point, and not leaue any part of the mowen Heath or Lyng unburnt, or any part of the ground unſcorched; after this is done, and the ground cooled, you ſhall with your flat clotting beetles beate the aſhes hard into the ground, then you ſhall take a ſtrong plow, with a broad winged ſhare, and an euen colture, and you ſhall plow up all this ground thus burnt, in very large and deepe furrowes, by no meanes picking out any of the quicke roots which ſhal remaine in the furrowes ſo turned up, but letting them reſt in the earth ſtill, then with your hacks, and the helpe of your yron paring ſhouell, you ſhall cut up the furrowes,

Deſtroying of heath.

rowes, formerly turnd up, into ſhort pieces of three foot, or three foot and a halfe long, and ſome leſſe, as occaſion ſhall ſerve; then with theſe pieces, you ſhall build little hollow hills, ſuch as in the former Chapter you made of the upper ſwarth of the ground onely; and then filling the hollowneſſe with dry heath, and dry ſtraw mixt together, you ſhall ſet every hill on fire, and ſo burne the very ſubſtance of the earth into aſhes, which will ſoone be done by reaſon of the infinit number of roots and ſmall ſtrings which lye mixt in the earth, and the dryneſſe thereof occaſioned by the former burning: And this is another kind of burning of baite much differing from all the former, and yet to as great end and profit as any whatſoever; and theſe hills muſt as the former, bee placed one as neere another as is poſſible, ſo as they may ſpread and cover over the greateſt part of the ground, and leaving no more then a good reaſonable path to paſſe betweene hill and hill.

Another burning of baite.

Now as ſoone as you have thus burned all your Baite, and that your hills are cold, you ſhall then as was before ſhewed in the former Chapters, with beetles and ſhovels breake downe the hills, and ſpread the earth and aſhes over all the ground; which done, you ſhall ſand it (if the ſituation of the ground bee anſwerable thereunto) and lime it in ſuch ſort as was ſhewed in the ſecond Chapter; then when it is limed, and the lime equally ſpread, not more in one place then in another, you ſhall then manure it with the beſt manure you can provide, of which there is none better or more proper for this ground then mans ordure, and the rubbiſh, ſweepings, parings and ſpitlings of houſes mixt together, or for want of this (becauſe it may not bee in

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ſo great plenty as other manures) you may take either old Oxe dung, or Horſe dung, or for want of them, the old rotten and mouldy ſtaddles or bottomes of Corne-ſtacks, or reeds, eſpecially Peaſe-ſtacks, or Beane-ſtacks, provided that it bee thorowly rotten, for the leſſe rotten it is, the worſe it is: Alſo the ſcowrings of common Sewers, and eſpecially thoſe through which much of mans urine doth paſſe, is a moſt wonderfull and beneficiall manure for theſe grounds, ſo are alſo the ſcowrings of ſinkes and channells which come from Kitchins and waſh-houſes, where great ſtore of Brine and ſalt broth is ſhed, and other greaſie, fat and putrified ſubſtances, as alſo abundance of ſope-ſuddes, and buck-aſhes, and other ſope and lee waſhings, then which there is no better manure that can be uſed for theſe kind of grounds.

After your ground is thus perfectly made and manured, and that Wheat ſeede time doth draw on, which (as before was ſhewed) is ever at the latter end of *September*, you ſhall then plow up your ground againe in that manner as was ſhewed for the former earths, to wit, much deeper then before: for you are to underſtand, that this ground being dreſt as is before declared, there will remaine nothing of the furrowes which were firſt plowed up but the aſhes, which being covered with ſand, lime, and manure, the earth will lie plaine and levell, ſo that of neceſſity you muſt raiſe up new furrowes of new earth, which being done, you ſhall then with your hacks, cut all the new earth into very ſmall pieces, mixing them well with the other mould made of ſand, lime, manure and aſhes; then as was before ſaid, you ſhall harrow it to make the mixture ſo much the better, and the mould ſo much

the finer; and then if it have beene ſanded, you may ſowe your Seede-wheate ſimply of it ſelfe, without any doubt of the plentifull increaſe thereof; but if it have not been ſanded, then as in the forgoing Chapter, you ſhall not onely ſteepe your Seede in brine (as before ſhewed) but alſo you ſhall mixe your Seed with Bay ſalt, and ſo ſow it into the ground; or if at the time of ſowing (after it is plowed, hackt, and harrowed) you beſtow either Pigeons dung, or Pullens dung, or Sheepes dung upon the land, it will be much better, and the Corne will give a much greater increaſe. Now as ſoone as your land is ſowne, you ſhall then forthwith harrow it againe and cover the ſeede very cloſe, then you ſhall clot it, ſmooth it, and ſleight it (as was before ſhewed.)

Of Weeding. As touching the weeding and clenſing of this earth after the Corne is ſprung up, you ſhall underſtand that there is great care to bee had thereunto, for this ground is much ſubject unto weedes and thoſe of the worſt kind: for although for the moſt part it will bee free from all manner of ſoft and tender weedes, as thiſtles, cockle, darnell, ketlockes, dockes, rape, and ſuch like herball ſtuffe; yet is it much ſubject to twitch bryars, which grow at both ends, lyng, Wild time, and ſuch like, any of which as ſoone as you ſhall ſee appeare or peepe above the earth, you ſhall preſently with your Nippers pull them up by the rootes, and not ſuffer them in any wiſe to looke a handfull above the ground, for if you doe, their hardneſſe is ſo great, and their rootes ſo large and faſt fixt in the mould, that you can by no meanes pull them away without great loſſe and hurt to the graine, pulling up with them all ſuch roots of Corne, as ſhall bee fixed neere about them: for

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any other weak and ſuperfluous things which ſhal grow from the Land, you may with ordinary weeding-hookes cut them away; as for long graſſe, whether it be ſoft or ſedgie, or any other ſuch like ſtuffe, you ſhall not ſtirre it but let it grow; for it keepeth warme the rootes of your Corne, and giveth nouriſhment and increaſe thereunto: Now for the profit of this ſoyle thus ordered and husbanded, it is equall with any of the former, and will beare Wheate very plentifully for the ſpace of the three firſt yeares; good Barley the fourth yeare, with the helpe of the ſheepe-fold (as was before ſaid) and good Oates the fifth, ſixth and ſeventh yeares; and very good ſmall Peaſe the eighth yeare (for Beanes this ſoyle will very hardly beare at all) and the ninth, tenth and eleventh yeare it will beare very good meadow (though not altogether very fine pure graſſe, yet very good feeding and wholeſome graſſe) or ſo good paſture as a man can reaſonably require for any holding Cattell whatſoever; nay, it will alſo indifferently well feed, and fat Cattell, though peradventure it requireth a little longer time than other finer grounds will.

CHAP. 6.

Of the ordering, Tylling and Dreſſing of all plaine, ſimple barren Sands, bearing nothing but a ſhort moſſie graſſe.

HAving thus (in as large manner as I hope ſhall bee needfull for any judiciall or indifferent Reader) written of the Natures, Orderings, Plowings and Dreſſings of all manner of barren and unfruitfull Clayes, whether they be ſimple of themſelves, or elſe com-

pounded with other earths, as ſands, chaulkes, gravels, and ſuch like; ſhewing by thoſe naturall burthens which continually of their own accords they produce (which indeed is the eaſieſt and ſafeſt way of knowledge) how to amend and better them, and bring them to that perfection of fruitfulneſſe, that the beſt earth ſhall but in a very ſmall degree exceed them, nay, hardly any thing at all, except in the ſaving of a little charge and ſome labour, without which nothing is to be obtained by the Husbandman; neither is this charge or labour thus beſtowed on theſe barren grounds to be grutcht at by any honeſt mind; ſince the worſt crop of ten or eleven, will make good his charge and toyle with a reaſonable intereſt; ſo that I make account, nine or ten yeares profits come into his Barnes without purchaſe, for it is to be intended that all theſe earths formerly ſpoken of, are not to be dreſt, or to put the Husbandman to any charge more than the firſt yeare of ten or eleven, for the ſecond yeare he ſhall as ſoone as he hath gathered his Wheat off, which will be in *Auguſt*, and finiſht other parts of his Harveſt, preſently put his Plow into the ſame Wheate-ground againe and plow it up, hack it, hatrow it, ſow it, harrow it againe, clot it, and weed it, as in the former yeare, and ſo conſequently of all the reſt of the yeares following, whereby you perceive that all labours and charges are ſaved more than once plowing and ſowing.

This then conſidered, it neceſſarilie now followeth that I ſpeak of the bettering and bringing into perfection of all manner of baren Sand-grounds, being ſimple of themſelves, without any mixture of other Earths, except one and the ſame kind, as Sand with

with ſand, though peradventure the colours of the ſands may alter; as red with white, yellow with blacke, &c. which in as much as the whole ſubſtance is ſand without any contrary mixture, therefore it may well be called ſimple and not compound: and of theſe ſands, I purpoſe to intreate, as formerly I did of the Clayes; that is to ſay, by their outward faces and Characters, which are thoſe burthens and increaſes which of their owne proper natures, without any helpe or compulſion of any others, they produce and bring forth into the world.

And firſt of that naughty cold and barren ſand, which lying upon high, ſtony, and mountainous Rocky places, or elſe upon lower cold bleake Plaines, ſubject to the North and North-eaſt winds and tempeſts, or bordering upon the Seas, doth not bring forth any thing but a ſhort moſſie graſs which the Sun maketh bitter, & the cold dews fulſome and unſavory in taſte. If any man then be maſter of ſuch unprofitable & unfruitfull earth, and deſire to have it brought to goodneſſe & perfection, you ſhall, firſt, at the beginning of the Spring, about midde *Aprill* or earlier, with a ſtrong Plow anſwerable to the ſoyle, yet ſomewhat leſſe both in timbers and irons than that wherewith you plow your Claye grounds, plow ſo much of that earth up as you may conveniently compaſſe to ſow and dreſſe exactly and perfectly; for to undertake more, were to make all unprofitable, and to caſt away much labour and charge without any profit; this ground you ſhall plow of an indifferent depth, though not ſo deepe as the Clayes, and you ſhall lay the furrowes though flat, yet cloſe one to another, without leaving any balke betweene, but plowing all very cleane; yet not ſo Plowing.

very cleane and close together, that you may lay the greene swarth to the new plowed or quicke earth; but rather turne one swarth against another, so as the furrowes may lye, and no more but touch the edges one of another: This when you have done, you shall then with your hacks cut and break all the earth so turned up into very small pieces, and not onely the earth so turned up, but also all other greene swarth which was left unplowed; provided, that before this labour of hacking, you let the ground lie certaine dayes in the furrowes, that one swarth heating and scalding the other, they may both equally rot and grow mellow together, which once perceived by the blackneſſe thereof, you may then at your pleasure hacke it and cut it as is before declared.

Objection. Now some may in this place object unto me, that this labour of hacking should be needlesse, in as much as all sand grounds whatsoever are out of their own natures so light, loose, and willing to dissever, that this toyle might very well and to good purpose bee saved.

Answer. To this I answer, that true it is, most sands in their owne natures are loose, and light, and willing to dissever into fine mold without any extremity, especially rich and fruitfull sands, whose predominant quality of warmth giveth nourishment and increase; but these barren and cold sands, in which is a certaine flegmatique toughneſſe and most unwholesome drineſſe, are of a cleane contrary nature, and through the stony hardneſſe thereof, they are as unapt to breake and dissever as any Clay whatsoever: besides, the swarth being of a tough mossie substance (which ever carrieth a hard strong roote answerable with the cold in which

it

it is ingendred) doth ſo conſtantly binde, fetter, and hold the mould to gather, that it is impoſſible for any harrow to breake it in pieces, or together from it ſo much mould as may ſerve to cover the Corne and give it roote when it is ſowne into the ſame; and therefore this work of hacking is neceſſary.

When therefore you have thus hackt your Land and diſtributed the mould into many ſmall pieces, you ſhall then with all expedition marle it; which foraſmuch as it is no generall or common practice in every part of this Kingdome, I will firſt tell you what marle is, and then how to find it, digge it, and uſe it for your beſt behoofe. Of Marling.

Marle, you ſhall then underſtand is (according to the definition of Maſter *Bernard Palliſſy*) a naturall and yet an excellent ſoyle, being an enemy to all weedes that ſpring up of themſelves, and giving a generative vertue to al ſeeds that are ſowne upon the ground, or (for the plaine husbandmans underſtanding) it is a certaine rich, ſtiffe and tough Clay, of a glewie ſubſtance and not fat or Oylie as ſome ſuppoſe. This Marle is in quality cold and dry and not hot (as ſome would have it) and it was earth before it came to bee Marle, and being made Marle yet it is but a Clay ground; all Chalke whatſoever was Marle before it was Chalke, and all manner of Stones which are ſubject unto Calcynation or burning, as Lime-ſtone, Flint, or the like, were firſt Marle before they were ſtones, and onely hardned by accident and ſo not poſſible to be diſſolved but by fire: as for Marle it ſelfe when it is a little hardned it is onely diſſolved by froſts and nothing elſe, and thence is the cauſe that Marle ever worketh better effect the ſecond yeare than the firſt; Additions

This

This Marle hath beene made ſo precious by ſome writers that it hath beene accounted a fift element, but of this curioſity I will not now diſpute.

Touching the complections of colours of Marle, there is ſome difference, for though all conclude there are foure ſeverall colours in Marle, yet one ſaith, there is a white, a Gray or Ruſſet, a Blacke and Yellow; another ſaith, there is a Gray, a Blew, a Yellow and a Red; and a third ſaith, there is a Red and white mixt like unto porphery, and all theſe may well be reconciled, and the colours may alter according to the Climat and ſtrength of the Sunne: So that by theſe Characters, the colour, the toughneſſe, and the looſeneſſe when it is dryed, any man of judgement may eaſily know Marle from any other earth whatſoever. This Marle is ſo rich in it ſelfe, and ſo excellent for continuance, that it will maintaine and enrich barren grounds, the worſt for ten yeares, ſome for a dozen, and ſome for thirty yeares; yet there is a great reſpect to bee had in laying of this Marle upon the ground, that is to ſay, that you lay it neither too thicke nor too thinne, that you give it neither too much, nor too little, for any of theſe extremities are hurtfull; and therefore hold a meane, and ſee there be an indifferent mixture between the Marle and the earth, on which it is laid.

For the generall finding out of this Marle, there is no better way for readineſſe and the ſaving of charges, than by a great Augure or wimble of Iron made to receive many bits one longer than another, and ſo wreſting one after another into the ground to draw out the earth till you finde you are come to the Marle, which perceived and an aſſay taken, you may then digge at your pleaſure.

Now

Now for the places moſt likely where to find this Marle, it is commonly found in the loweſt parts of high Countries, neere Lakes and ſmall Brookes, and in the high parts of low Countries, upon the knols of ſmall hills, or within the Clifts of high Mountainous bankes, which bound greater Rivers in: to conclude, you ſhall ſeldome find any of theſe barren ſands but they are either verdged about with marle grounds, or if you will beſtow the labour to digge below the ſand, you ſhall not faile to find either marle, or ſome quarry of ſtone, or both; for in ſome places marle lieth very deep, in other ſome places within a ſpades graft of the upper ſwarth of the earth: therefore it ſhall be good for you to make proofe of all the moſt likely parts of your ground to find out this marle; and as ſoone as you have found it out, you ſhall with mattocks and ſpades digge it up and carrie it to your land, there laying it in bigge round heapes, and ſetting them within a yard or two one of another; thus when you have filled over all your ground (which would be done with as great ſpeed as might be, for the ancient cuſtome of this Kingdome was, when any man went about to marle his ground, all his Tenants, Neighbours and Friends would come and help him to haſten on the worke) you ſhall then ſpread all thoſe heapes, and mixing the Clay well with the Sand, you ſhall lay all ſmooth and levell together; and herein is to be obſerved, that if the land you thus marle ſhall lye againſt the ſide of any great Hill or Mountaine, whereby there will be much deſcent in the ground, then you ſhall (by all means) lay double as much Marle, Sand, or other compaſſe on the top of the hill as on the bottome, becauſe the

the raine and ſhowers which ſhall fall will ever waſh the fatneſſe of the earth downe to the loweſt parts thereof.

Now in the laying of your marle, you are to hold this obſervation, that if you laye it on hard and binding grounds, then you are to lay it in the beginning of Winter, but if on grounds of contrary nature, then it muſt be laid in the ſpring or Summer. Againe, you ſhall obſerve, that if you cannot get any perfect and rich marle, if then you can get of that earth which is called Fullers earth, and where the one is not, commonly ever the other is, then may you uſe it in the ſame manner as you ſhould marle, and it is found to be very neere as profitable.

☞ Additions Obſervations.

When your ground is thus marled (if you be neere to the ſea-ſide) you ſhall then alſo ſand it with ſalt ſea-ſand, in ſuch ſort as was formerly declared, onely you may forbeare to lay altogether ſo much upon this ſand ground as you did on the Clay ground, becauſe an halfe part is fully ſufficient. If you cannot come by this ſalt-ſand, then in ſtead thereof, you ſhall take chalke, if any be to be had neere you, and that you may lay in more plentifull manner than the ſand; and al-be it is ſayd, that chalk is a wearer out of the ground, and maketh a rich father, yet a poore ſonne, in this ſoyle it doth not ſo hold, for as it fretteth and waſteth away the goodneſſe that is in Clay groundes, ſo it comforteth and much ſtrengtheneth theſe ſand earthes: and this chalke you ſhall laye in the ſame manner as you did your marle, and in the ſame manner ſpread it and levell it, which done, you ſhall then Lime it, as was before ſhewed in the Claye grounds, yet not ſo abundantly, becauſe alſo a halfe part will bee ſufficient; after your Liming, you ſhall then manure it with the beſt manure that you have, whether it bee

Of Chalke, and the uſe.

dung

dung of Cattell, Horſe, Sheepe, Goats, Straw, or other rubbiſh; and that being done, and ſeede-time drawing on, you ſhall then plow up your ground againe, mixing the new quicke earth and the former ſoyles ſo well together, that there may bee little diſtinguiſhment betweene them; then you ſhall hacke it againe, then harrow it, and laſtly, ſow it with good, ſound, and perfect ſeed, and of ſeedes though Wheate will very well grow upon this earth, yet Rye is the more naturall and certaine in the increaſe: yet according to the ſtrength of the ground, you may uſe your diſcretion, obſerving that if you ſowe wheate, then to ſteepe it before in brine or ſalt ſea-water, as was before deſcribed; but if you ſowe Rye, then you ſhall ſow it ſimply without any helpe, except it be Pigeons dung, or Bay-ſalt ſimple of it ſelfe, in ſuch manner as hath beene before declared; either ſowing the ſalt with the Corne, or before the Corne, as ſhall ſeeme beſt in your owne diſcretion.

After your ſeede is ſowne, you ſhall then harrow it againe, clot it, ſmooth it, and ſleight it, as before is ſhewed in the ſecond Chapter, which done (after the Corne is ſhot above the earth) you ſhall then looke to the weeding of it, being ſomewhat a little too much ſubject to certaine particular weedes, as are Hare bottles, wild Cheſſe-bolles, Gypſy-flowers, and ſuch like, any of which, when you ſee them ſpring up, you ſhall immediately cut them away cloſe by the rootes, as for tearing their rootes out of the ground with your Nippers, it is not much materiall, for the cutting of them is ſufficient, and they will hardly ever againe grow or do you any hinderance; many other weedes there may grow amongſt theſe which are alſo to be cut away, but

theſe

theſe are the principall, and of moſt note, wherefore as ſoone as you have cleanſed your lands of theſe and the reſt, you ſhall then referre the further increaſe of your profit unto Gods providence.

The Profits. Laſtly, you ſhall underſtand that this ground being thus plowed, dreſt, and ordered, will without any more dreſſing, but once plowing and ſowing, every yeare beare you good Wheate or good Rye three yeares together; then good Barley the fourth yeare; good oates the fifth, ſixth and ſeventh yeares; excellent good Lupins the eight yeare, and very good Meadow or Paſture three or foure yeares after, and then it ſhall be neceſſary to dreſſe it againe in ſuch manner as was before deſcribed.

Chap. 7.

Of the Plowing, Tilling, Ordering and Inriching of all Barren Sands which are laden and over-runne with Braken, Ferne, or Heath.

NExt unto this plaine, cold, barren Sand, which beareth no other burthen but a ſhort moſſie graſſe, I will place that Sand which is laden and over-runne with Braken, Ferne, or Heath, as being by many degrees more barren then the former, both in reſpect that it is more looſe, and leſſe ſubſtantiall, as alſo in that it is more dry and harſh, and altogether without nutriment, more then an extreme ſterile coldneſſe, as appeareth by the burthen it bringeth forth, which is Braken or Ferne, a hard, rough, tough weede, good for nothing but to burne, or elſe to litter ſtore beaſts with, for the breeding of manure; or if you ſtrow it in the high-wayes where many travellers paſſe, it will alſo there turne

to

to good reasonable compasse.

Of this kind of ground if you be master, and would reduce it unto fertility and goodnesse, you shall first, whether the Braken bee tall and high (as I have seene some as high as a man on Horse-backe) or short and low (as indeede most commonly these barren earths are, for tall Ferne or Braken shewes some strength in the ground) you shall with sythes first mowe it downe in the moneth of *May*, then whither it and dry it upon the ground, and after spread it as thinne as you can over all the earth you intend to plow, which done, you shall bring your plow and begin to plow the ground after this order: first, you shall turne up your furrow, and lay it flat to the ground, greene-swarth against greene-swarth, then looke how broad your furrow is so turned up, or the ground so covered, and just so much ground you shall leave unplowed betweene furrow and furrow, so that your land may lye a furrowe and a greene balke, a furrowe and a greene balke, till you have gone over all the ground, then shall you take a paring-shovell of yron, and pare up the greene swarth of all the balkes betweene the furrowes, at least two inches thicke, and into peeces of two or three foote long, and with these peeces of earth, and the dry Ferne whith is pared up with them, you shall make little round hollow Faire hills, as in the third and fourth Chapters, and these hills shall be set thicke and close over all the ground, and so set on fire and burnt; then when the fire is extinct, and the hilles cold, you shall first with your hacks cut in peeces all the furrowes that were formerly turned up, and then breake downe the burnt hils, and mixe the ashes and earth with the other mould very well together; which done, you shall then

Of destroying Braken.

Of Marle.

then with all ſpeede marle this earth as ſufficiently as poſſibly may be, not ſcanting it of marle, but beſtowing it very plentifully upon the ſame; which done, you ſhall then plow it over againe, & plowing it exceedingly well, not leaving any ground whatſoever untorne up with the plow; for you ſhall underſtand that the reaſon of leaving the former balkes was, that at this ſecond plowing after the marle was ſpread upon the ground, the new, quicke, and unſtirred freſh earth might as well be ſtirred up to mixe with the marle, as the other dead earth and aſhes formerly received, whereby a freſh comfort ſhould be brought to the ground, and an equall mixture without too much dryneſſe, and this ſecond Ardor or plowing would begin about the latter end of *Iune*.

Sanding and liming.

After your ground hath beene thus marled, and the ſecond time plowed, you ſhal then ſand it with ſalt Sea-ſand, lime it, and manure it, as was declared in the fore-going Chapter: and of all manures for this ſoyle, there is not any ſo exceeding good as ſheepes manure, which although of the Husbandman it bee eſteemed a manure but of one yeare, yet by experience in this ground it hapneth otherwiſe, and is as durable, and as long laſting a compaſſe as any that can be uſed, and beſides it is a great deſtroyer of thiſtles, to which this ground is very much ſubject, becauſe upon the alteration of the ground the Ferne is alſo naturally apt to alter unto thiſtle as we daily ſee.

Plowing and ſowing.

When your ground is thus dreſt and well ordered, and the Seede-time commeth on, you ſhall then plow it againe, in ſuch manner as you did the ſecond time, that is to ſay, very deepe, cleane, and after the manner of good Husbandry, without any reſt balkes or other diſorders:

diſorders: then ſhall you hack it very well, then harrow it, and then ſow it; but by mine advice, in any caſe, I would not have you to beſtow any Wheat upon this ſoyle (except it be two or three buſhels on the beſt part thereof for experience ſake, or proviſion for your houſhold) for it is a great enemy unto Wheat, and more than the marle hath no nouriſhment in it for the ſame, becauſe all that commeth from the ſalt ſand, lime, and manure, is little enough to take away the naturall ſterility of the earth it ſelfe, and give it ſtrength to beare Rye, which it will do very plentifully; and therefore I would wiſh you for the firſt three yeares only to ſow the beſt Rye you can get into this ground; the fourth yeare to ſow Barley; the fift, ſixt, and ſeventh, Oates; and of Oates, the bigge black Oate is the beſt for this ground, maketh the beſt and kindlieſt Oat-meale, and feedeth Horſe or Cattell the ſoundeſt; as alſo it is of the hardeſt conſtitution, and endureth either cold or dryneſſe much better than either the white Oate, the cut Oate, or any Oate whatſoever; the eighth yeare, you ſhall only ſow Lupins or Fetches; and three yeares after, you ſhall let it lye for graſſe, and then dreſſe it againe as beforeſaid; for it is to be underſtood, that in all the following yeares (after the firſt yeare) you ſhall beſtow no labour upon this ground more than plowing, ſowing, hacking, and harrowing, at Seed time only.

But to proceed to the orderly labour of this ground, after you have ſown your Rye, you ſhall then harrow it againe, clot it, ſmooth it, and ſleight it, as was before ſhewed in the ſecond Chapter of this Book. And although a man would imagine that the ſandy looſeneſſe of this ſoyle would not need much clotting

Labours after ſowing.

clotting or ſleighting of the Earth, yet by reaſon of the mixture thereof with the Marle and manure, it will ſo hold and cleave together, that it will aske good ſtrong labour to looſen it and lay it ſo hollow and ſmooth as in right it ſhould be.

Weeding. Touching the weeds which are moſt ſubject to this ſoyle, they are Thiſtles, and young Brakes or Fernes which will grow up within the Corne, which before they riſe ſo high as the Corne, and even as it were at the firſt appearing, you muſt with your woodden Nyppers pull up by the roots, and after take up and lay in ſome convenient place where they may wither and rot, and ſo turne to good manure.

CHAP. 8.

Of the Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are laden and over-run with Twitch, or wild Bryar.

HAving written ſufficiently of this hard and barren, waſt, wild, ſandy ground, which is over-run with Braken, Fern, Heath, and ſuch like: I will now proceed, and unto it joyne another ſand which is much more barren, and that is the ſand that bringeth forth nothing but wild Twitch, Bryars, Thorn-buſh, and ſuch like undergrowth of yong miſliking wood, which never would riſe or come to profit the bitter cold drines of the earth wherein it groweth, and the ſharpe ſtormes to which the clime is continually ſubject both day and night, blaſting it in ſuch manner that nothing appeareth but ſtarved, withered, and utterly unprofitable burthens,

good for nothing but the fire, and that in a very ſimple ſort. Such ground if you be Maſter of, and would reduce it to profit and fruitfulneſſe, you ſhall firſt with hooks or axes cut up the upper growth thereof, that is, the buſhes, young trees, and ſuch like, then you ſhall alſo ſtub up the roots, not leaving any part of them behind in the earth, carrying away both home to your houſe to be imployed either for fuell, or the mending of the hedges, or ſuch like, as you ſhall have occaſion; this done you ſhall take a paire of ſtrong iron harrowes, and with them you ſhall harrow over all the earth, tearing up all the Twitch, Bryars, and rough graſſe ſo by the roots, that not any part but the bare earth may be ſeen, and when your harrows are cloyed, you ſhall unlade them in ſeverall places of the ground, laying all ſuch rubbiſh of weedes and other ſtuffe which the harrows ſhall gather up in a little round hill, cloſe up together that they may ſweat, wither and dry, then ſpreading them abroad and mixing them well with dry ſtraw, burne them all over the ground, leaving no part of the weeds or graſſe unconſumed, then without beating in of the aſhes, you ſhall preſently plow the ground all over very cleane as may be, laying the furrows as cloſe as you can one to another, and leaving no earth untoucht or untorne up with the plow, which done, you ſhall immediately hack it into ſmall peeces, and as you hack it, you ſhall have idle Boyes to go by the Hackers, to gather away all the roots which they ſhall looſen or break from the mold, and laying them on heaps in the worſt part of the ground, they ſhall there burne them, and ſpread the aſhes thereon, after your ground is thus harrowed, plowed, and hackt, you ſhall then muck it, as was formerly ſhewed in the

Deſtroying of Twitch and Bryar.

ſixt Chapter, then ſhall you ſandit, dime it, and manure it as beforeſaid.

Manures. Now of manures, which are moſt proper for this ſoyle, you ſhall underſtand that either Oxe, or Horſe manure, rotten ſtraw, or the ſcowring of Yards is very good, provided that with any of theſe manures, or all theſe manures, you mixe the broad-leaved weeds, and other greene weeds, which grow in Ditches, Brookes, Ponds or Lakes, under Willow trees, which with an Iron Rake, Drag, or ſuch like inſtrument, you may eaſily draw upon the banke, and ſo carry it to your land, and there mingle it with the other manure, and ſo let it rot in the ground, this manure thus mixed is of all other moſt excellent for this ſoyle, both by the experience of the Ancients who have left it unto memory, as alſo by daily practice now uſed in ſundry parts of this Kingdome, as well becauſe of the temperate cooleneſſe thereof, which in a kindly manner aſſwageth the lime and ſand, as alſo through the moyſture which diſtilling through thoſe warme Soyles doth quicken the cold ſtarved earth, and giveth a wonderfull encreaſe to the Seed that ſhall be thrown into the ſame.

Harrowing and other labours. After your ground is thus ſufficiently dreſt with theſe ſoyles and manures, you ſhall then plow it againe the ſecond time; which would be after *Michaelmas*, after the plowing you ſhall then hack it againe, and be ſure to mixe the earth and the manures very well together, then you ſhall break it in gentle manner with your Harrows, and then ſow it; which done, you ſhall harrow it againe, but then you ſhall harrow it much more painfully, and not leave any clots or hard earth unbroken that the Harrow can pull in peeces: as touching

touching the Seed which is fitteſt for this earth, it is the ſame that is ſpoken of in the next foregoing Chapter: as namely, the beſt Rye, or the beſt Maſlin, which is Rie and Wheat equally mixt together, or if there be two parts Rye, and but one Wheat, the Seed will be ſo much the more certaine and ſure holding, and this Seed you may ſow on this ground three yeeres together, then Barley, then Oates, and ſo forth, as is formerly writ of the grounds foregoing. After your ground is ſowne and harrowed, you ſhall then clot it, ſleight it, and ſmooth it as you did the other grounds before, and then laſtly with your back Harrows, that is, with a paire of harrowes, the teeth turned upward from the ground, and the back of the harrow next unto the ground, you ſhall run over all the ground and gather from the ſame all the looſe Graſſe, Twitch, or other weeds that ſhall any waies be raiſed up, and the ſame ſo gathered, you ſhall lay at the lands end in heaps, either to rot for manure, or elſe at the time of the yeare to be burnt for aſhes, and ſprinkled on the earth the next ſeed time.

Laſtly, touching the weeding of this ſoyle, you ſhall underſtand the weeds which are moſt incident thereunto, are all the ſame you firſt went about to deſtroy: as namely, Twitch, rough wild Graſſe, and yong woody undergrowth, beſides Thiſtles, Hare-bottles, and Gypſie-flowers; therefore you ſhall have a great care at the firſt appearance of the Corne, to ſee what weeds ariſe with it, (for theſe weeds are ever fully as haſty as the Corne) and as ſoone as you ſee them appeare, both your ſelfe and your people with your hands ſhall pull them up by the roots, and ſo weed your land as you would weed a garden, or Woad-

Weeding.

ground. Now at if this first weeding (which will be at the latter Spring commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let some weeds passe your hands unpulled up (which very well may chance in so great a work) you shall then the Summer Spring next following (seeing them as high, or peradventure higher than the Corne) with your wodden nippers pull them up by the roots from the ground, and so cast them away: As touching the cutting them up close by the ground with ordinary weed hooks, I do in no sort allow it, for these kind of weeds are so apt to grow, and also so swift in growth, that if you cut them never so close in the Spring, yet they will againe overmount the Corne before harvest, and by reason of their greatnesse, roughnesse, and much hardnesse, choake and slay much Corne that shall grow about them, and therefore by all meanes you shall pull these weeds up by the roots whilst they are tender (if possibly you can) or otherwise in their strongest growth, sith their sufferance breedeth great losse and destruction.

Chap. 9.

Of the Plowing, Tilling, Ordering and Enriching of all barren Sands which are over-run with Mores or morish stinking long Grasse.

Unto these foregoing barren Sands, of which I have already written, I will lastly joyne this last barren Sand, being of all earths, whether Clay or Sand the most barrennest, and that is that filthy black morish Sand which beareth nothing but stinking, putrified

ed Graſſe or Moſſe, or Moſſe and Graſſe mixed together, to which not any Beaſt or Cattell, how corſe or hardly bred ſoever, will at any time lay their mouths: and this kind of ground alſo is very much ſubject to marſhes and quagmires, of which that which is covered with Moſſe, or Graſſe, is the worſt, and that which is tufted above with ruſhes, the beſt and ſooneſt reduced unto goodneſſe, in briefe, all theſe kinds of grounds generally are extremely moiſt and cold, the ſuperabundance whereof is the occaſion of the infinite ſterility and barrenneſſe of the ſame.

And therefore he that is maſter of ſuch unprofitable Earth, and would have it brought to ſome profit or goodneſs, ſhall firſt conſider the ſituation of the ground, as whether it lye high or low, for ſome of theſe marſh grounds lye low in the Valleyes, ſome on the ſides of Hills, and ſome on the tops of Mountaines; then whether the much moyſtneſſe thereof be fed by River, Lake, or Spring, whoſe veines not having currant paſſage through or upon the earth, ſpreads lookingly over all the face thereof, and ſo rotting the mould with too much wet, makes it not onely unpaſſable, but alſo utterly unprofitable for any good burthen.

Now if you find that this marſh Earth lye in the bottome of low valleys, as it were garded about with hills or higher grounds, ſo that beſides the feeding of certaine Springs, Lakes, or Rivers, every ſhowre of raine or falling of water from higher grounds bringeth to theſe an extraordinary moiſture to maintain the rottenneſſe, in this caſe this ground is paſt cure for graſſe or Corne, and would only be converted and made into a fiſh-pond for the breeding and feeding of Fiſh, being a

Ground for Fiſh ponds.

thing no leſſe profitable to the Husbandman for keeping his houſe, and furniſhing the market than the beſt Corne-land he hath; and therefore when he maketh any ſuch pond, he ſhall firſt raiſe up the head thereof in the narroweſt part of the ground, and this head by driving in of ſtakes and piles of tough and hard wood, as Elme, Oake, and ſuch like, and by ramming in of the earth hard between them, and ſodding the ſame ſo faſt that the mould can by no meanes be worne downe or undermined with the water, he ſhall bring it to as firme earth as is poſſible, and in the midſt of this head he ſhall place a ſluce or floud-gate made of ſound and cleane Oake timber and plancks, through which at any time to draine the Pond when occaſion ſhall ſerve, and this done, you ſhall digge the pond of ſuch depth as the earth conveniently will beare, and caſting the earth upon either ſide, you ſhall make the banks as large and ſtrong as the ground requireth; then if any ſpring which did before feed the earth be left out of the compaſſe of the pond (becauſe it lyeth too high to be brought in) then ſhall you by drawing gutters or drains from the ſpring down to the pond, bring all the water of the ſprings into the pond, and ſo continually feed it with freſh and ſweet water. Then ſtoring it with Fiſh of beſt eſteeme, as *Carpe*, *Tench*, *Breame*, *Pearch*, and ſuch like, and keeping it from weeds, filth and vermine, there is no doubt of the dayly profit.

But if this marſh and low ground, though it lye low and have many ſprings falling upon it, yet it lyeth not ſo extreme low but that there is ſome River or dry ditches bordring upon it, which lie in a little lower diſcent, ſo that except in caſe of inundation the river and ditches are free from the moyſture of this ground, but

where

where there is any over-flowing of waters, there this marſh ground muſt needs be drowned, in this caſe this ground can hardly be made for Corne, becauſe every over-flow putteth the Graine in danger, yet may it be wel converted to excellent paſture or meadow, by finding out the heads of the Springs, and by opening and cleanſing them, and then drawing from thoſe cleanſed heads, narrow draines or furrows, through which the waters may paſſe to the neighbour ditches, and ſo be conveyed down to the lower Rivers; leaving all the reſt of the ground dry, and ſuffering no moiſtures to paſſe, but what goeth through theſe ſmall deepe channels, then as ſoone as ſummer commeth, and the ground begins to harden, if you ſee any of the water ſtand in any part of the ground, you ſhall forthwith mend the Draine, and help the water to paſſe away, which done (as the ground hardneth) you ſhall with hacks and ſpades lay the ſwarth ſmooth and plaine, and as early in the yeare as you can conveniently, you ſhall ſow upon the ground good ſtore of hay-ſeeds, and if alſo you do manure it with the rotten ſtaddles or bottomes of hay-ſtacks, it will be much the better, and this ſtaddle you ſhall not ſpread very thick, but rather of a reaſonable thinneſſe, that it may the ſooner rot and conſume upon the ſame.

But if this marſh and filthy ground do not lye ſo low as theſe low valleys, but rather againſt the tops of hils, you ſhall then firſt open the heads of all the ſprings you can find, and by ſeverall draines or ſluces, draw all the water into one draine, and ſo carry it away into ſome neighbouring ditch and valley; and theſe draines you ſhall make of a good deapth, as at leaſt two foot, or two foot and a halfe, or more, if need require,

Draining of wet ground.

require, and then croſſe-wiſe, every way overthwart the ground, you ſhall draw more ſhallow furrows, all which ſhall fall into the former deep draines, and ſo make the ground as conſtant and firme as may be: then having an intent to imploy it for corne, you ſhall bring your plow into the ground, being a very ſtrong one, and not much differing in Timber-work or Irons from that which turneth up the clay-grounds, and laying before the plow long waddes or roules of the ſtraw of Lupines, Peaſe, or elſe Fetches, (but Lupines is the beſt) you ſhall turne the furrows of earth with the plow upon the waddes, and ſo cover or bury them in the mould, and thus do unto every furrow, or at leaſt unto moſt of the furrows you turne up, and ſo let it lye a little time to rot, as by the ſpace of a fortnight or three weekes, in which ſpace, if the ground receive not raine and moyſture enough to rot the ſtraw thus formerly buried, you ſhall then by ſtopping the draines, and making the Springs over-flow, gently waſh the ground all over and no more, and then preſently draine it againe; which done, as ſoone as the earth is dry, you ſhall hack it and breake it into ſmall peeces, and then you ſhall alſo Sand it, Lime it, and manure it.

And laſtly you ſhall marle it; but if no ſalt ſand be to be had, then in ſtead of it you ſhall chalke it, yet of all the reſt you ſhall take the leaſt part of chalke.

This done, about the latter end of *July* you ſhall plow up the ground againe with ſomewhat a better and deeper ſtitch than you did before, that if any of the ſtraw be unrotted or unconſumed, it may againe be raiſed up with the new moyſt earth, and ſo made to waſte more ſpeedily, and if at this ſecond carrying you

do

do ſee any great hard clots to riſe, then with your hacks you ſhall break thoſe hard clots in peeces, laying the Land cleane without clots, weeds, or any other annoyance, and ſo let it reſt till *October*, at which time you ſhall plow it over againe, hack it, harrow it, and then ſow it with the beſt Seed-Wheat; for this ſoyle thus dreſt and manured, albeit it be of all other the moſt barren, yet by reaſon of this moyſture, which at pleaſure may be put to it, or taken from it, and by the mixture of theſe comfortable ſoyles and compaſſes, it is made as good and fruitfull as any earth whatſoever, and will beare Wheate abundantly for the ſpace of three yeares together; then good Barley the fourth yeare, with a little help of a Sheepfold, or Sheepes manure; then Rye the fifth yeare; Oates the ſixth, the ſeventh and eighth yeares; ſmall Peaſe the ninth yeare; good medow or paſture three yeares following, and then to be new dreſt againe, as beforeſaid.

Now as ſoone as your Seed-wheat is ſown, you ſhall then harrow the ground again, and be ſure to cover the wheat both deep and cloſe; as for the clots which ſhall ariſe from this ſoyle, it ſhall not matter whether you break them or no, for by reaſon of their moiſture, they will be pliant and eaſie for the Wheat to paſſe through, ſo that you ſhall not care how rough your land lye, ſo it lie cleane, and the corne well covered, but for all other ſeeds, you ſhall breake the clots to duſt, and lay the land as ſmooth as may be. Harrowing.

Now for the weeding of this ſoyle, you will not be much troubled therewith, becauſe this ground naturally of it own accord, putteth forth no weeds, more than thoſe which are ingendred by the new made fruitfulneſſe. Weeding.

fulneſſe thereof, and thoſe weeds for the moſt part are a kind of ſmall ſedge, or hollow reed; any of which if you ſee appear, or with them any other kind of weed, you ſhall at the firſt appearance, either pull them up by the roots with your wodden nippers, or elſe cut them cloſe by the ground with your weed-hooks.

CHAP. 10.

A generall way for the enriching of any poore arable ground, either Clay or Sand, with leſſe charge then formerly.

IF the former demonſtrations and inſtructions which I have ſhewed thee, appeare neither too difficult, or too coſtly (for now I ſpeak to the plaine, ſimple, poore Husband-man) and yet thou art maſter of none but barren earth, than thou ſhalt by thine own induſtry, or the induſtry of thy Children, Servants, and ſuch like, or by contracting with Taylors, Botchers, or any poore people that will deſerve a penny, gather up, get or buy all the rags, ſhreds; and baſe peeces of woollen cloth whatſoever, which are only caſt out, and fit for nothing but the dung-hill, and of theſe if thou canſt compaſt but a ſack-full, or a ſack-full and a halfe, it is ſufficient for the dreſſing of an acre of arable ground. Theſe ſhreads and raggs (torne ſmall) or hackt and hewd into ſmall peeces or bits, thou ſhalt thinly ſpread over the land before fallowing time, then comming to fallow, plow them all into the ground, and be ſure to cover them, then give your land the reſt of it ardors, as ſtirring, foyling, ridging, &c. in their due ſeaſons, and after

Ragges of woollen cloth.

after an Husbandly manner: then when you come to ſow it, you ſhall take the ſlimie thick water which commeth from dung-hils, or for want thereof, water in which Cow-dung hath been ſteeped, and therein you ſhall ſteepe your ſeed corne, that is to ſay, if it be Barley, you ſhall ſteepe it for the ſpace of thirty ſixe houres, or thereabouts; if it be Wheat, but eighteen houres; and if it be Peaſe, but twelve houres; for Rye, or Oates, not at all: and the ſeed thus ſteeped, you ſhall ſow it according to good Husbandry, and there is no doubt of wonderfull encreaſe.

Steeping of ſeed corne.

Or any pulſe.

There be others which take the ſeed-corn, and ſteeping it in good ſtore of Cow-dung and water; ſtirre all together for an houre in the morning, and an houre at night, and then being ſetled, draine the water from the ſeed and the dung, and the next morning ſow the corne and the dung both together on the land, being ſure not to ſcant the Land of Seed, and no doubt the encreaſe will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein ſteep your ſeed, it is good alſo, and eſpecially for Barley, as is approved by dayly experience.

But now me thinks I heare the poore man ſay, that here is but one acre dreſt, and that is a ſmall proportion: to this I anſwer, if thou beeſt able but to dreſſe one acre with theſe woollen ragges, thou ſhalt then ſearch amongſt the Horners, Tanners, Lanthorne-makers, and ſuch like, and get all the waſte ſhavings of horne which thou canſt poſſibly compaſſe, and as before of the rags, ſo of theſe a ſacke and a halfe, or two ſacks will dreſſe an acre: theſe ſhavings (which are indeed good for no other uſe) you ſhall ſcatter upon the land as you did the rags,

Shavings of horne.

rags, then plow them in after the ſame manner, ſo order the ground, ſo ſow, and in the ſame manner ſteep the ſeed, and queſtionleſſe the encreaſe will be wonderfull great: theſe manures will laſt five yeares without any renewing. Now if of theſe you cannot get ſufficient to trim all your ground, you ſhall then deale with Butchers, Sowſe women, Slaughter-men, Scullions, and the like; and from theſe you ſhall get all the hooſes you can, either of Oxe, Cow, Bull, Calfe, Sheepe, Lambes, Deere, Goates, or any thing that cheweth the cud, and which indeed, if not for this uſe, are otherwiſe utterly caſt away to the dung hill, and deſpiſed; and theſe hooſes you ſhall cut and hew into ſmall peeces, and ſcatter thicke upon your land at fallowing time, then plow them in as aforeſaid, and do in all points as with the other manures already recited, and ſo ſteepe your ſeed, and there cannot be a greater inricher of arable ground whatſoever.

Hooſes of cattell.

Now if all theſe will not yet compaſſe your land, you ſhall then ſee what ſope aſhes you can get or buy, for of all manures there is none more excellent, for beſides it giveth an exceeding ſtrength and fatneſſe to the land, it alſo killeth all manner of weeds, great and ſmall, as Broome, Gorſe, Whynnes, and the like, and it killeth all manner of Wormes, and venemous creeping things, it is excellent for Woad, and the ground renewed yearely therewith, may be ſowne continually: theſe ſoape-aſhes muſt be laid on the Land after the fallowing, and then ſtirred in, two loade thereof will ſerve to dreſſe an Acre: when it is fit for ſeed, the ſeed muſt be ſteept as aforeſaid, and then ſowen, and the encreaſe will quit the charge manifold. Theſe ſope-aſhes are alſo excellent good

Of Woad.

fo

for Hempe and Flax, being thinly ſowne upon the land, after is plowed, and immediately before the Seed be ſowne: But if you have more land to dreſſe, then you muſt make uſe of your own ordinary manure, as is Oxe-dung, Horſe-dung, and the like, which that you may make richer and ſtronger then otherwiſe of its owne nature it would be, you ſhall cauſe continually to be thrown upon it all your powdred beefe broth, and all other ſalt broths or brines which ſhall grow or breed in your houſe, alſo all manner of ſoape-ſuddes, or other ſuddes, and waſhings which ſhall proceed from the Launderie, and this will ſo ſtrengthen and enrich your manure that every load ſhall be worth five of that which wanteth this help. There be diverſe other manures which do wonderfully enrich and fatten all manner of barren grounds, as namely the haire of beaſts hides, (which for the moſt part Tanners and Glovers do caſt away) this thinly ſpread on the Land, and plowed in, brings every yeare a fruitfull crop. Againe, if Braken or Ferne be layed a foot thick upon the Earth, and then a layer of earth upon it, then another layer of Braken, and another layer of earth, and ſo layer upon layer till the heape be as big as you intend it, and ſo left to rot all the Winter following, there cannot be a better manure for any arable ground; for you ſhall underſtand that the earth will ſo rot the Braken, and the Braken ſo ſoake into the earth, that they will become both one rich ſubſtance. And herein you ſhall note, that whenſoever you would have any ſubſtance (of what condition ſoever) quickly to rot and turne to manure, that the only way is to mixe it with earth, and that will in ſhort ſpace bring it to rottenneſſe. Now this Braken and

The enriching of ordinary manure.

The haires of beaſts hides.

Of Braken.

To rot dung quickly.

and earth thus rotted, you ſhall lay upon your land as you do your ordinary dung of cattell, and then ſow your ſeed being ſteept, as aforeſaid.

Of Malt duſt. Next your Malt-duſt which is the ſprout, come, ſmytham, and other excrements of the malt, is an excellent manure for arable land, allowing three quarters thereof for an acre, and ſtrowing it upon the land after it is plowed and ready to be ſown.

Of rotten Pilchers and garbage. There is another manure, which albeit it is not plentifull every where, yet in ſome places it is, and not inferiour to any manure before ſpoken of, and that is your rotten Pilchards after the oyle is taken from them, and the carcaſſes caſt to the dung-hill, this laid on the land, and plowed in, bringeth corne in great abundance, and no leſſe doth the carcaſſes and garbage of all kind of fiſh whatſoever, eſpecially of ſea-fiſh.

Of bloud offa's Laſtly, the bloud, entrals and offall of any beaſts is an excellent manure for any kind of graine, plant, or tree, but eſpecially for the Vine, for to it there is no nouriſhment of greater force or efficacie: alſo, if this bloud be tempered with Lime it is exceeding comfortable for graine, and deſtroyeth wormes, and other creeping things which hurt Corne, only it muſt not be applied preſently but ſuffered for a little time to rot, leſt the too much heat thereof might ſcorch and do hurt to the root of the Corne: this manure is to be laid on the earth when you ſow it, and ſo the ſeed and it harrowed or plowed in together, which done after the order of good workmanſhip, there is no doubt of the encreaſe.

CHAP.

CHAP. 11.

How to enrich for Corn, any barren, rrough, wooddy ground being newly ſtubbed up.

IF you have any barren wooddy ground which is newly ſtubbed up, and that you would convert it to arable, you ſhall then take a great quantity of the underwood, or worſt bruſh-wood wch was cut from the ſame, and in themoſt convenienteſt place in the field, as in the middeſt, or neere there about, you ſhall frame it into a broad hollow pyle, and then cover it all over with great ſodds of earth, which done, ſet fire on it, and leave no part thereof (either wood or earth) unburnt, then take thoſe aſhes and ſpread them all over the field, ſo farre forth as you meane to plow up, then with a good ſtrong plow fallow the ground as deepe as you can, and ſo let it reſt till it be almoſt *May*, then take either Ferne, Stubble, Straw, Heath, Furres, Sedge, Beane ſtalkes, or any other waſt groweth, take I ſay either any one, or more of theſe, or all together as you ſtand poſſeſt of them, and burne them to aſhes and therewith cover your land the ſecond time, and then in Summer tirre it within a Moneth after ſoyle it then at the beginning of October, or a little before, plow it againe, and ſow it with Rye the firſt crop, and you ſhall ſee the increaſe will be very plentifull, the next yeare you may ſow it with Wheate, the third yeare with Barley, the fourth yeare with Peaſe, Lupins, Fetches, or any other pulſe, and then beginne with Wheate again, for it is credibly ſaid, that

Wood aſhes

Aſhes of Ferne, Straw, &c.

this manner of dreſſiug theſe barren, wooddy grounds, ſhall maintaine and keepe the earth in good heart; and ſtrength (in the worſt places) for the ſpace of foure yeares, in that which is any thing reaſonable for the ſpace of ſix yeares, and where there is any ſmall touch of fertility for the ſpace of ſixteene yeares; of which there are dayly experinces in *France*, about the forreſt of *Arden*, and ſome with us here in *England* in many wooddy places.

CHAP. 12.

The manner of reducing again and bringing unto their firſt perfectionall ſorts of ground which have beene overflowed or ſpoyled by ſalt-water, or the Sea-breach, either arable or paſture, as alſo the enriching or bettering of the ſame.

THere is nothing more hard or difficult in all the art of husbandrythen this point of which I am now to intreat, as namely, the reducing and bringing unto their firſt perfection all ſorts of grounds which have beene overflowed or elſe ſpoiled by the Sea-breach, and bringiug in of too great abundance of ſalt-water, which to ſome men of little experience, and free from theſe dangerous troubles may appear a matter very ſleight, and the wound moſt eaſie & curable, & the rather, becauſe in all my former relations and demonſtrations touching the bettering of every ſeverall ſort of ground, I do apply as one of my chiefeſt ingrediens or ſimples, by which to cure barrenneſſe, Salt ſand, ſalt weeds, ſalt water, ſalt brine, Aſh-

The difficulty of this labour.

The vertues of Salt,

es, Lime, Chaulke, and many other things of ſalt nature as indeed all meanures and marles whatſoever muſt either have a ſalt quality in them, or they cannot produce fruitfulneſs, ſo that to argue ſimply from naturall reaſon, If ſalt be the occaſion and fruitfulneſs & increaſe then there cannot be much hurt done by theſe overflowes of the ſalt water. but that it ſhould rather adde a fattening and enriching to the ground then any way to impoveriſh it, & make it incapable of growth or burthen. But experience (which is the beſt Miſtreſs) ſhewes us the contrary, and there is nothing more noyſome & peſtilent to the earth then the ſuperabundance and to great exceſſe of ſaltneſſe; for according to our old Proverbe of *omne nimium*, that to much of every thing is vitious, and as we ſee in the ſtate of mans body that your ſtrongeſt poyſons, as *Antimony* or *Stibium*, *Coloquintida*, *Rubarb*, and the like, taken in a moderate nature, are moſt healthfull, and expell of thoſe malignant qualities which offend the body, & occaſion ſickneſſe; but taken in the leaſt exceſſe that can be deviſed they then (out of their vitious and noughty qualities) do ſuddenly and violently deſtroy all health, and bring upon the body inevitable death, and imortality; ſo is it with this matter of ſalt, and the body of the earth for as by the moderate diſtributing thereof it correcteth all barren qualities. diſperſeth cold, and naughty vapours and yeeldeth a kind of fatneſſe and fruitfulneſs whereby the Seede is made more apt to ſprout, and the ground more ſtrong or able to cheriſh the ſame till it come to perfection, through the ſharpe, warme, and diſperſing quality thereof; ſo beeing beſtowed in too great abundance and exceſs, whereby the earth is ſurfeited, and as it were over-

The vices which come from ſalt.

The abuſe of ſalt in exceſſ.

come and drowned up with too much of this naturall goodneſſe. and helpfull quality, then all his proper vertues turn to egregious vices, as his wholſome ſharpneſſe to a fretting, gnawing, and deſtroying greedineſſe; his comfortable warmneſſe to a conſuming, and waſting fierneſſe, and his gentleneſſe in diſperſing; to an infectious and venomous pollution, by the joynt qualities of all which together, the ground is made neither fit to receive any thing from the hand of the Husband-man, nor yet to produce or bring forth any thing of it ſelfe, becauſe every good quality is abuſed or expelled, and nothing but unnaturalneſſe and ſterility left; which like a Serpent lodgeth in the ground and will ſuffer no good thing to have ſociety with it; and theſe are the effects and miſchiefes which are occaſioned by theſe Sea-breaches or irrundations of the ſalt water.

Of ſalt moderately uſed.

It is certaine that although in the ſalt marſhes, where the Sea commeth in at certain times, and onely waſheth or ſprinkleth the ground all over, and ſo departeth, there is neither want of graſſe, nor yet complaint of any evill quality in the graſſe, yet it is moſt certaine that no overflow of ſalt water how little or moderate ſoever, can be truely ſaid to be wholſome for any kind of graſſe ground whatſoever; for graſſe is compounded of an infinite world of plants and ſimples, and moſt of them of ſeverall natures and qualities, ſo that if it give nouriſhment to one, yet it may deſtroy anne; neither do I find it by any of the Ancients ſimply and properly applied unto the graſſe grounds, but firſt unto the arable, in whichhaving ſpent its primary or firſt ſtrength upon the ſeede (which is) great and greedy devourer or eater up of the ſtrength

No overflow of ſalt water good for graſs.

and fatneſſe of the earth) it then prepares and makes the ground more able and fit to bring forth graſſe, and that of the beſt and fineſt kind, for although the Maſters of the Salt-marſhes find a ſingular and rare profit in thoſe grounds for the feeding, breeding, fatting, and ſuſtaining of their great Flocks of Sheepe, which upon theſe ſalt grounds, they ſay will never rot or periſh by that univerſall diſeaſe, yet muſt they not impute that to the great quantity, goodneſſe, or any growth in the graſſe, but to the Salt which they lick up in the graſſe, and to the ſalt quality of the graſſe, which is not only an Antidote or preſervative againſt that noyſome and peſtilent mortality, but alſo a delightfull and pleaſant food wherein thoſe Cattell take more contentment than in any other thing whatſoever; ſo that I muſt neceſſarily reſt upon this concluſion, that as but moderate waſhing and overflowing of Salt waters are no certaine or particular great helps unto graſſe-grounds, eſpecially if they be applyed thereunto, and to that purpoſe ſimply at the firſt, without any other preparative or working by a former meanes, as by tillage, digging, delving, or the like; ſo the exceeding great inundations or Sea-breaches which lye long ſoaking and ſinking into the earth muſt needs be a certaine, infallible, and almoſt incurable cauſe of barrenneſſe, eating, ſpoyling, and conſuming the very roots of all manner of plants, trees, and growths, by which the ground is made utterly incapable of generation or bringing forth: and therefore where theſe great inundations or overflowings cannot be either prevented or avoyded, but as the ſeaſons of the yeare they do and muſt hold their courſes, there I would not wiſh any man to beſtow either his labour or his

The grounds of the ſalt Marſhes.

A true cauſe of barrenneſſe.

Where this annoyance is incurable.

Where it is curable.

coſt, for it is loſſe of time and loſſe of ſubſtance: but where it is to be prevented or avoyded by induſtry, or that thoſe over-flowings or Sea-breaches come and happen by caſualty or change, as either by the unnaturalneſs and ſuperabundance of tides being driven in by the violence and impetuouſneſſe of outragious winds, or by any neglect or breach in the Sea-wall, or other misbaps of the like nature, which happeneth ſometimes ſcarce once in an age, at the moſt not above once or twice in many yeares; in theſe caſes there is moſt certaine remedy, and the ground ſo ſpoyled and waſted, may by art and induſtry be againe reduced and brought to the former perfection and goodneſſe; nay, many times amended and freed from many faults & ſterile qualities, to which it was either naturally addicted, or elſe by chance and accident grew thereunto, by continuall wearying and imployment, without reſt, or refreſhing by the artificiall means of wholeſome manures, or other ſtrengthenings which ought to be applyed before thoſe faults grew into extremities.

The manner of the cure.

Now touching the cure of theſe grounds which are thus worne out, decayed, and made barren by theſe Inundations of Salt water, the owner thereof is firſt to draw into his conſideration, that as the malignity and evill quality of the earth is grown by too much fretting, gnawing, and waſting of the Salt, ſo it muſt be allayed and qualified by a quite contrary condition, which is freſhneſſe: the contrary then to ſalt water, muſt of neceſſity be freſh water, ſo that you are to caſt about in your judgement, and by the view, ſituation, and levell of the ground (which for the moſt part can have but little difficulty in it, becauſe theſe grounds upon which the Sea thus breaketh, muſt ever be the loweſt of all other, ſo that a true deſcent com-

One contrary helps another.

ing unto it, and a true aſcent coming from it, there is no hardneſſe to convey any water courſe thereunto) look how to bring a freſhneſſe which may conquer and overcome this ſaltneſſe, and that muſt therefore be freſh water, which by channels, ditches, furrowes, ſluces, and the like, you may bring from any freſh river, ſpring, pond, or other freſhwater courſe (though removed ſome diſtance of miles from the place to which you would convey it) to the very place to which you deſire to have it, & with this freſh water you ſhall waſh and gently drown over ſo much of your ſpoyled ground as you ſhall be able reaſonably to deale withall in other coſts and labours for that yeare; and if you have plentifull ſtore of freſh water, then having (as I ſaid) drowned it over gently, about foure inches, or halfe a foot deepe, you ſhall ſo let it lye two or three daies, then draine away that water by the help of back ditches, or by ſluces made for that purpoſe, which if the ſituation of the ground deny you, and that there is no ſuch convenient conveyance, then you ſhall in the loweſt part of the ground (either joyning upon ſome other ſpoiled ground, or upon the Sea-wall or bank) place a Coy, which may either caſt the water into the other ground, or elſe over the wall and bank into the ſea; and having thus drained away the firſt water, you ſhall then open your ſluces of freſh water againe, and drown your ground over the ſecond time, and do in all things as you did before, & thus according to the plentifulnes of your freſh water, you ſhal drown your ground, or at leaſt waſh it over with freſh water twice a weeke before the beginning of the Spring, and if the ſalt water have laine long, or be but new departed, then you ſhall uſe your freſh water for ſome part of the Spring alſo.

The watering with freſh water.

How to draine away the freſh water.

How often to drown the earth.

Now ſome may object unto me here (and it is a matter altogether unlikely) that in ſome of theſe

Helps if fresh water be want ing.

places where these inundations and breaches are, it is impossible either to find fresh water, and to bring fresh water unto them, because all the springs for many miles about being made naturally blackish, and the rivers by the infection of the salt tides, having lost the greatest part of their sweet freshnesse; the question now resteth, whether these blackish waters are wholesome for this purpose, I or no? To this I must needs answer, that they cannot in any wise be good for these spoyled grounds, because the earth naturally is of an attractive and drawing condition, sucking and gathering unto it selfe any thing that is of a sharpe, sweet, or sower taste, and especially saltnesse, so that being covered with those brackish waters, it will draw from them onely their salt (of which it hath too much already) and no part of the freshnesse which should qualifie and amend it: therefore if either your ground be thus situated, or your necessities thus unsupplyed, it is better that you rather forbeare this labour of washing or drowing your earth (though it be the first, the speediest and surest cure of all other) than by watering it with infinite and unwholsome waters, rather encrease the mischiefe, than any way delay it.

Whether brackish water be wholesome.

The first time of plowing, and the observations therein.

After you have watered your ground (if it be a work impossible to be attained unto) or otherwise neglected it being a thing not possible to be found) you shall then about the latter end of *March* plow up all the ground with a good deepe stitch, turning up a large furrow, and laying it into lands, raise them up as much as you can, and make them round, then look of what nature or temper the earth is, as whether it be fine sand, rough gravell, stiffe clay, or a mixt earth, or any of these contraries together; If it be a fine sand, either white, red,

How to mixe earths.

or

or brown, it matters not whether, then you shall take any clay earth which is free from these salt washings, being of a meane or small stiffenesse, and likewise of as meane and little richnesse, which being digged out of some banke, pit, or other place where least losse is to be had, you shall carry it in tumbrels or carriages to the new plowed ground, and there first lay it in heapes as you do manure, then after spread it all over the Land, and being dry, with clotting beetles break it as small as you can possibly, for this hungry Clay being of no rich and fat condition, will so suck and draw the salt into it, that it will take away much of the evill quality, and mixing his tough quality with the loose condition of the sand, they will both together become apt for fruitfulnesse and generation.

If the soyled ground be a rough hard gravelly earth, then you shall mixe or spread upon it the best and richest fresh Clay you can get, or if there be any such fruitfulnesse neere about you, then with a good blew marle, for that is the coolest and the freshest, and will the soonest draw out the salt from the gravell, and give it a new nourishment, whereby any Seed shall be fed and comforted which is cast into it. The mixture for Gravell.

If the spoyled earth be of its own nature a stiffe and tough Clay, which is but seldome found so neere the Sea shoare, then after the plowing, you shall mixe it, and cover it over with the freshest and finest Sand that you can possibly get, for that will not only separate the Salt from the Clay, and take away the naturall toughnesse and stiffenesse of the same, which hindereth and suffocateth the tender sprouts, so as they cannot easily get out of the earth, but also by lending a gentle warmth, wil assuage the cold quality of the clay, and The mixture of Clay.

and make it bring forth moſt abundantly.

The mixture of mixt earth.

Laſtly, if the ſame ſpoiled earth be of a mixed quality, then you ſhall looke whether it be binding or looſening, if it be binding, then you ſhall mixe or cover it with fine freſh ſand, if looſening, then with a reaſonable rich and tough clay, for ſo you ſhall bring it to an open and comfortable temper, making it able both to receive, cheriſh, and bring forth the ſeed; which before either too much wet, or too much drineſſe did ſtifle and bind up within the clots and mould, ſo as it had no ſtrength to beare himſelfe through the ſame.

The ſecond plowing.

When you have covered your lands with this mixture, you ſhall then plow it over againe before *Midſomer*, turning the new laid earth under the old earth, and as ſoone as that labour is finiſhed, you ſhall then lade forth your manure or compaſſe unto it, in which you are to have a great care what manure you elect for this purpoſe, for it is not the richeſt and fatteſt manure, as your Pigeons dung, or Pullens dung, Lime, Chalke, or aſhes, your Horſe dung, your ſhovelings up on high wayes, your beaſts hoves, your horne ſhavings, your Hempe-weede, or any other weede which groweth neere the ſeydge of the ſea, neither your Oxe or Cow-dung, though of all before named, that is the beſt which doth the moſt good upon theſe ſpoyled grounds, becauſe they have all in them a ſtrong quality of ſaltneſſe or ſharpneſſe, which will rather adde than diminiſh the evill quality of the earth, but inſtead of theſe you ſhall take the mudde of dried bottomes of Lakes, Ponds, and Ditches of freſh water, and the moyſter or wetter ſuch mudde or bottomes are, the better it is, or Straw which is rotted by ſome freſh water courſe, raine, or the like, by no meanes

Election of manures.

The beſt manure.

that

that which is rotted by the urine or ſtale of Horſe or Cattell, for that is the ſalteſt of all other; or you may take any weeds which you ſee grow in freſh Rivers, Ditches, Ponds, or Lakes, eſpecially thoſe which grow at the bottomes of Willow, Sallow, or Oſier trees, or you may take the old rags of woollen cloth, or any other manure which you know to be the woolleſt or freſheſt, and with any of theſe, or all of theſe together, you ſhall very plentifully cover your ground all over, and immediately upon the covering or laying on, ſee you preſently plow it, land after land; for to give it any long reſpite after it is ſpread, the Sun out of his attractive and ſtrong nature will exhale and draw out all the vertue from your manure, and ſo ſpoyle much of your labour.

The ordering of the manure.

The third plowing.

When you have thus manured it, and plowed it, you may then let it reſt till *Michaelmas*, at which time you may plow it the laſt time, and then ſow it with the ſtrongeſt and hardeſt Wheat you have, of which the white Pollard is the beſt, and there is no queſtion but if it be ſafe from a ſecond Inundation, your crop will both be plentifull and rich, and alſo acquit & pay largely for all your former charges. The ſecond yeare you need but only plow it as aforeſaid; and then ſow it with good Hemp-ſeed, and be aſſured you will have a brave crop ariſe thereof; then the third yeare you ſhall plow it as flat as you can, ſtill throwing it down and not raiſing it up at all, and then ſow it with the beſt Oates you can get, according to the nature and ſtrength of your Countrey, and be ſure to harrow it well, and to break every clot, and make the mould as fine as is poſſible, and the next yeare after your Oates, lay it for graſſe, and I dare be bold, it will beare reaſonable mea-

The laſt plowing, and the Sowing.

The ſecond yeare ſowing and third.

Laying the earth for graſſe.

dow;

dow; yet would I not have you this yeare to preſerve it for that purpoſe; but rather to graze it with Sheep or Cattell, eſpecially Sheepe, of which I would have you lay on good ſtore; for it matters not how neare or cloſe to the ground they eate it; for the next yeare it will be come to the fulneſſe of perfection; and be as profitable or more profitable ground than ever it was, and then you may apply or accommodate it for what uſe you pleaſe, either arable, Meadow, or for continuall grazing.

Of grazing.

And thus much touching the manner of reducing againe, and bringing unto their firſt perfection, all ſorts of grounds which have been over-flowed or ſpoyled by Salt-water, or the Sea-breaches; whether it be arable or paſture; as alſo the enriching or bettering of the ſame.

CHAP. 13.

Another way to enrich barren Paſtures, or Meadows, without the help of water.

IF your barren Paſtures or Meadows be ſoſeated that there is no poſſible meanes of waſhing or drowning them with water, you are then only to reſtore and ſtrengthen them by the efficacy of manure or ſoyle, without any other help, and this may diverſe wayes be done, as by thoſe manner of manurings which I have formerly treated of. But to go a better and briefer way to worke, and more for the eaſe and capacity of the plaine Husband-man, whenſoever you ſhall be poſſe

poſſeſt of theſe barren paſtures, if the barrenneſſe proceede from ſand, or gravell, then ſome Husbands uſe to meanure the paſture over with the beſt clay they can get, firſt laying it in heapes, then ſpreading it, and laſtly with clotting beetles breaking it into as fine duſt as they can get it, and this labour they commonly performe as ſoone as they can after Harveſt when the latter ſpring is eaten, and the earth is moſt bare, but if the barrenneſſe proceede from an hungry, cold and dry clay then the meanure is with the beſt mooriſh blacke earth which they can get, or with any moyſt meanure whatſoever, eſpecially and above the reſt when the ſoile that is digged out of old ditches, ponds, or dried up ſtanding lakes, and this earth muſt be laid plentifully upon the ground in meanure heaps, as aforeſaid, that is to ſay, firſt in great heapes, then after broken and diſperſed over the whole ground, and laſtly broken into ſmall duſt, and mixed with the ſwarth of the ground, and this labour as the other is generally performed after the Harveſt as a time of moſt convenience, and giving the earth a fit reſpire to ſucke in the ſtrength and comfort of the new earth and alſo having all the Winter after with his froſts, ſnowes, and ſhowers, to mellow, ripen and mixe together the one earth with the other, and doubtleſſe this is a moſt exceeding good Husbandry, and not to be refeld or carpt againſt by any knowing or ſound judgement onely it is not the moſt abſoluteſt, or beſt of alwayes whatſoever, but that others may befound ſome what more neere, and ſomewhat more commodious.

Clay meanure

Mooriſh earth.

Therefore whenſoever you ſhall be owner of any of theſe barren paſtures, or meadowes of what nature or condition ſoever the earth be, whether proceeding from

The beſt way to inrich paſture or meadow.

from gravell sand, clay, or pestered with any other malignant quality whatsoever, to reduce it to fertility and goodness in the shortest time, & to the most profit, about the Moneth of *March*, when all pasture grounds are at the barest, and do as it were remain at a stand between decreasing, and increasing, you shall begin then to lead forth your meanure for the refreshing of these Earths, and the meanure which you shall carry unto these grounds, shall be the soyle of streets within Cities or Towns, or the parings and gatherings up of the high-wayes much beaten with travell, also the earth for two or three foote deep which lieth under your dung-hill when the dung is removed, and carryed away, for this is most precious and rich mould and is not alone excellent for this use, but also for the use of Gardens, for the strengthning and comforting of all sorts of tender plants, and for the use of Orchards, for the comforting both of old and young Trees, when at any time their Rootes, are bared, or otherwise when there groweth any mislike or decreasing.

The soil of the streets or high-wayes.

Earth under Dung-hills.

To enrich gardens or orchards.

The mould of willow in trees

You shall also take the fine earth or mould which is found in the hollow of old Willow trees, rising from the roote up, almost to the middle of the tree, at least so far as the tree is hollow, for then this there is no earth or mould finer or richer.

Of all these meanures, or of any one of them, or of as many as you can conveniently get, you shall lead forth so much as may very plentifully meanure & cover your ground all over; you shall first lay it on the earth in reasonable bigge heapes, that the Sunne may not exhale the goodnesse out of it, and then at your best leasure, and so soone as you can conveniently you shall

ſhall ſpread it univerſally over the field, diſperſing it as equally as you can, unleſs your field be more barren in one place then in another, which if it be, then you ſhall lay the greateſt plenty where it is moſt barren, and the leſſe where you find the greateſt fertility; yet by all meanes ſee you ſcant not any place, but give every one his due; for to do otherwiſe would ſhew much ill Husbandry.

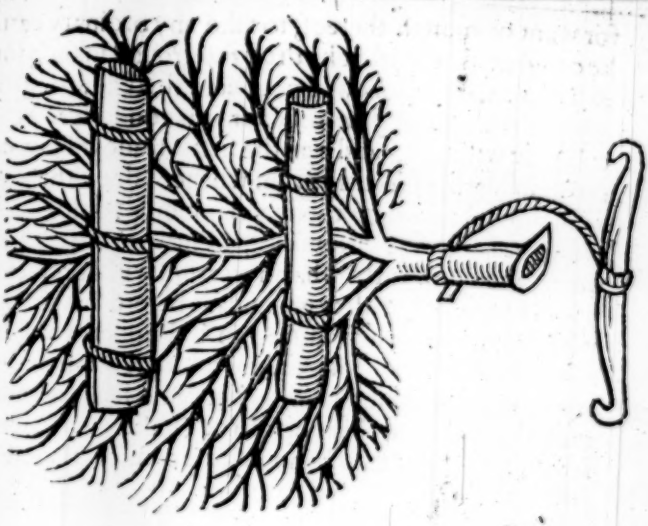
Now it is the uſe of ſome Husband-men, that what mould or earth the lade out from ſixe a clocke in the morning till three of the clocke in the after-noon, that they make their Hinds ſpread iu the eveuing before they go to Supper, and queſtionleſſe it is a very good courſe, and worthy to be imitated of euery good Husband. *The ſpreading of mould.*

After you have laid forth your mould, and ſpread it all over your paſture or meadow, then you ſhall make ſome boyes, girles or other people, to picke and gather up al the ſtones, ſtickes, or other unneceſſary matter which might happen to be led forth with the mould, and to pick and lay the paſture ſo clean as is poſſible, which done it is to be intended that yet notwithſtanding this ground will lye exceeding rough, both in reſpect of the clottes of earth, which will no eaſily be broken, as alſo in reſpect of naturall roughneſſe of theſe rich moulds which at this time being digged up in the wet will not eaſily be ſeperated or diſſolved, and therefore when you have finiſhed the labours before ſaid, you ſhall let the clottes reſt till the Sunne, and weather have dried them, then after a good ground ſhower (obſerving to take the firſt that falleth) you ſhall harrow your ground over after this manner. *Of ſtone gathering.*

You

A new way of Harrowing.

You ſhall cut downe a pretty bigge white thorne-tree, which we call the Hauthorne tree, and make ſure that it be wonderfull thicke, buſhy and rough grown, which done, you ſhall plaſh it as flat as you can, and ſpread it as broad as you can, and thoſe branches or boughes which of neceſſity you muſt cut in ſunder, you ſhall againe plaſh and thruſt into the body of the Tree, binding them with cords or withes ſo faſt thereto, that they may by no means ſcatter or ſhake out, and if any place appear hollow or thin, and cannot come to lye, hard, firm, and rough upon the ground, then you ſhall take other rough buſhes and thruſt into the hollow places, and bind them from ſtirring, alſo till you have made your plaſh full and equall in all places, & that all the roughneſſe may as in a flat levell equally touch the ground, when you have thus proportioned your Harrow, you ſhall then take great logges of wood or pieces of timber: and with ropes bind them on the upper ſide of this rough Harrow, that the poiſe or weight of them may keepe the rough ſide hard, and firm to earth, and then the Harrow will carry this proportion or figure.



To the big end of this Harrow, you ſhall fixe a ſtrong rope, with a Swingle-tree with Treates, Coller, and Hames, and one Horſe is fully ſufficient to draw it round about the Paſture or Medow, ſo with this Harrow you ſhall Harrow the ground all over, and it will not only break all the hard clots to a very fine duſt, but alſo diſperſe them and drive them into the ground, and give ſuch a comfort to the tender roots of the young graſſe then newly ſpringing, that it will double and treble the encreaſe. And for mine owne part, this experience I my ſelfe have ſeene upon an extreme barren Paſture ground in *Middleſex*, where none of theſe good moulds or ſoyles could be got, but the Husband was faine to take all the rubbiſh and corſe earth, even to the very ſweepings of his yard, and Of rubbiſh and ſweepings.

for want of enough thereof, to take any ordinary earth he could get, and with it he dreſt the ground in ſuch ſort as I have now laſt ſhewed you, and this being done in *Aprill*, he had in *June* following as good Meadow as could be wiſht for, and was the firſt Meadow I ſaw cut down in all that Country: from whence I draw this concluſion, That where theſe better moulds or ſoyles are not to be had, if yet notwithſtanding you take any ordinary mould or earth whatſoever, and with it repleniſh your Paſture or Meadow grounds as before ſhewed, that without doubt you ſhall find an infinite commodity, and profit thereby; for even the rule of Reaſon, and generall experience ſhews us, that any freſh or quick mould coming to the root of the Graſſe, when it is in ſpringing, muſt needs be an infinite comfort thereunto, and make it proſper, and ſhoote up with a double haſte; and therefore I would have every Husbandman to make much of the rubbiſh, ſweepings, parings, and ſpitlings of his houſe and yard, as alſo of ſhovelings up of the high-waies, back-lanes, and other ſuch places, and eſpecially if they be any thing clayie, or moriſh, or ſandy mixt with any other ſoile; for of them he ſhall find great uſe, according to the Husbandry and experience already deſcribed.

Of Soape-aſhes.

Laſtly, there is not any thing that more enricheth Paſture or Meadow ground than Soape-aſhes, being thinly ſcattered and ſpread over the ſame, and this labour would ever be done at the latter end of *Aprill*, for then Graſſe is begining to ſhoot up, and at that time finding comfort, the increaſe will multiply exceedingly.

CHAP

CHAP. 14.

How to enrich and make the moſt barrenneſt ſoyle to beare excellent good Paſture or Meadow.

TO ſpeake then of the bettering and enriching of theſe barren earths, and reducing them to good Paſture or Meadow, it is to be underſtood, that there are but two certaine waies to compaſſe and effect the ſame, namely water or manure. Two waies to enrich earths.

You are then when you go about this profitable labour to conſider the ſituation of the earth you would convert to Paſture, and to elect for this purpoſe the beſt of this worſt earth your can find, and that which lyes loweſt, or elſe that which is ſo deſcending, as that the bottome thereof may ſtretch to the loweſt part of the continent, for the lower that ſuch grounds lye, the ſooner they are made good, and brought to profit: Next you ſhall conſider what burthen or graſſe it beares, and whether the graſſe be cleane and entire of it ſelfe (which is the beſt and likelieſt ſoile to be made fruitfull) or elſe mixt with other worſer growths, as Thiſtle, Heath, Broome, or ſuch like, and if it be burthened with any of theſe naughty weeds, you ſhall firſt deſtroy them by ſtubbing them up by the roots, and by burning the upper ſwarth of the earth with dry ſtraw mixt with the Weeds which you ſhall cut from the ſame, then it ſhall be good for certaine nights both before the firſt and latter Spring to fold your Sheepe upon this ground, and that not in a ſcant manner, but very plentifully, ſo as the dung of them may cover

over all the earth, and their feet trampling upon the ground, may not only beat in the dung, but alſo beat off all the ſwarth from the earth, that where the Fold goeth, there little or no graſſe may be perceived, then whileſt the ground is ſoft, and thus trampled, you ſhall ſow it all over with Hay-ſeeds, and then with your flatt board beetles beat the ground ſmooth and plaine, which done, you ſhall then ſtrow, or thinly cover over the ground with the rotten ſtaddes of Hay-ſtacks, and the moyſt bottomes of Hay-barnes, and over that you ſhall ſpread other ſtrong manure, of which Horſe-dung, or Horſe-dung and mans ordure mixt together is the beſt, or for want of ſuch, either the manure of Oxen, Kine, or other beaſts; and this manure alſo you ſhall ſpread very thinne upon the ground, and ſo let it lye till the Graſſe come up through the ſame, which Graſſe you ſhall by no meanes graze or feed with your cattell, but being come to the perfectneſſe of growth, you ſhall mow it down, and although it will be the firſt yeare but ſhort and very corſe, yet it skilleth not for the enſuing yeares ſhall it yield profit, and bring forth both ſo good graſſe, and ſuch plenty thereof, as reaſonably you can require; for this is but the firſt making of your ground, and alteration of the nature thereof: neither ſhall you thus dreſſe your ground every yeare, but once in twenty, or forty yeares, having plenty of water to relieve it. When therefore you have thus at firſt only prepared your ground by deſtroying the barren growth thereof, and by manuring, ſowing, and dreſſing it, you ſhall then carefully ſearch about the higheſt parts of the ground, and the higheſt parts of all other grounds, any way neigh-

neighbouring round about it, and ſomewhat above the levell thereof, to ſee if you can finde any Springs in the ſame, (as doubtleſſe you cannot chooſe but doe except the ground bee of more than ſtrange nature,) and the heads of all ſuch Springs as you ſhall finde, you ſhall by gutters and channels draw into thoſe ditches which ſhall compaſſe your meadow round about, obſerving ever to bring the water into that part of the meadow ditch which ever lyeth higheſt, and ſo let it have a currant paſſage through the ditches downe to the lower part thereof, and ſo into ſome Lake, Brooke, or other channell, and in this ſort you may bring your water a mile or two: Nay I have ſeene water brought for this purpoſe, three or foure miles, and the gaine thereof hath quit the charge in very plentifull manner. Of watering Grounds.

But if you cannot finde any Springs at all, nor can have the helpe of any Lake, Brooke, River, or other Channell of moving water, (which is a doubt too curious, as being caſt beyond the Moone) you ſhall then not onely caſt ditches about this your meadow ground, but alſo about all other grounds which ſhall lye about, and that in ſuch ſort, that they all may have no paſſage but into the upper part of the meadow ditch, ſo that what raine ſoever ſhall fall from the Skie upon thoſe earths, it ſhall bee received into thoſe ditches, and by them conveyed into the meadow ditch: and to augment the ſtore of this water, you ſhall alſo in ſundry parts of thoſe upper grounds which are above the meadow, in places moſt convenient, digge large Ponds or Pits, which both of themſelves may breed, and alſo receive all ſuch water as ſhall fall neere about them, and theſe Ponds or Pits being filled (as in the Winter Helpes in the watering.

time neceſſarily they muſt needes bee at every glut of raine) you ſhall preſently by ſmall draines, made for that purpoſe, let the water out from them into the ditches, and ſo into the meadow ditch, and ſo ſtopping all the draines againe, make the Ponds or Pits capable to receive more water.

When and how to water

When you have thus made your ground rich with water, and that you ſee it flow (as in the Winter-time neceſſarily it muſt) in plentifull manner through all your ditches, you ſhall then twice or thrice in the yeare, or oftner, as you ſhall then thinke meete in the moſt convenienteſt places of the meadow ditch, ſtop the ſame, and make the water, to riſe above his bounds, and to over-flow and cover your meadow-ground all over, and if it be a flat levell ground, if you let the water thus covering it to lye upon the ſame the ſpace of foure or five dayes, or a week, it ſhall not bee amiſſe; and then you may water it the ſeldomer. But if it lye againſt the ſide of a hill, ſo that the water cannot reſt upon the ſame, then you ſhall waſh it all over, leaving no part unmoyſtened, and this you ſhall doe the oftener, according as the weather ſhall fall out, and your water grow more or leſſe plentifull.

The beſt ſeaſon for watering.

Now for the beſt ſeaſon or time of the yeare for this watering of meadowes, you ſhall underſtand, that from *Allhallowtide*, which is the beginning of *November* (and at which time all after growth of meadowes, are fully eaten, and cattell for the moſt part are taken up into the houſe) untill the end of *April* (at the which time graſſe beginneth to ſpring and ariſe from the ground) you may water all your meadowes at your pleaſure without danger, if you have water enough at your pleaſure, and may ſpend or ſpare at your will;

yet

yet to doe it in the beſt perfection, and whereby your ground may receive the greateſt benefit; you ſhall underſtand, that the onely time for the watring of your meadowes, is immediately after any great Fluxe of raine, falling in the Winter, any time before *May*, when the water is moſt muddy, foule, and troubled, for then it carrieth with it a ſoyle or compaſſe which being left upon the ground, wonderfully inricheth it, and makes it fruitfull beyond expectation, as daily is ſeene in thoſe hard Countries where almoſt no graſſe growes but by this induſtry: And here you muſt obſerve, that as you thus water one ground, ſo you may water many, having ever reſpect to begin with the higheſt, and ſo let the water paſſe out of one ground into another, untill it come to the loweſt, which commonly is ever the moſt flat and levell, and there you may let the water remaine ſo long as you thinke good (as was before ſhewed) and then let it out into other waſte ditches or rivers. And here you ſhall know, that this loweſt ground will ever bee the moſt fruitfull, as well becauſe it lyeth the warmeſt, moyſteſt, and ſafeſt from ſtormes and tempeſts, as alſo becauſe what ſoyle or other goodneſſe this overflow of water, or the raine waſheth from other grounds, it leaveth upon this, and ſo daily encreaſeth the fertility, from whence you ſhall gather, that at the firſt making of theſe meadow grounds you may beſtow leſſe coſt of manure and other charges upon this loweſt, flat, levell ground, than on the higher: and ſo by that rule alſo obſerve to beſtow on the higheſt ground, and the higheſt part of the higheſt ground ever the greateſt abundance of manure, and ſo as you ſhall deſcend lower and lower, to lay your manure thinner and thinner, yet not any

part utterly unfurniſhed and voyd of Compaſſe, yet as before I ſaid you are to remember that theſe meadow-grounds need not thus much uſe of manure (having this benefit of water, and the firſt yeares dreſſing as was ſhewed in the beginning of this Chapter) above once in twenty yeares; nay it may bee not above once in a mans life time.

And here alſo is to bee conſidered, that the water which commeth from Clay or Marle grounds, being thicke muddy & pudly, is much better and richer than that which commeth from ſand, gravell, or pibble, and ſo runneth cleare & ſmooth, for that rather doth waſh away and conſume the goodneſſe of the ground, than any way adde ſtrength thereunto.

Chap. 15.

Of the inriching and dreſſing of barren grounds, for the uſe of Hempe or Flax.

Grounds ill for Hempe or flax

You ſhal underſtand there are two ſorts of grounds which out of their owne natures utterly refuſe to beare Hemp or Flaxe; that is, the rich ſtiffe black Clay, of tough, ſolid, and faſt mould, whoſe extreame fertility and fatneſſe giveth ſuch a ſurcharge to the increaſe of the ſeede, that either with the rankeneſſe it runneth all into Bun and no Rinde, or elſe the ſeed being tender, and the mould ſad and heavy, it burieth it ſo deepe therein, that it can by no meanes get out of the ſame, but lies choaked and conſumed without profit, the other is the moſt vilde and extreame barren ground, which by reaſon of the climat wherein it lies, is ſo exceedingly ſterile and unfruit-

fruitfull that it will neither beare theſe ſeeds, nor any other good ſeed; and of theſe two ſoiles onely I purpoſe in this place to treate, for with ſuch ſoiles as will naturally and commodiouſly beare theſe ſeeds, I have nothing to doe, in that I have ſufficiently written of them in mine *Engliſh Husbandman*, and *Engliſh Houſewife*, which are Bookes onely for good grounds, but this for all ſuch grounds as are utterly held without cure.

Blacke Clay for Hempe, &c.

To begin then with the ſtiffe blacke Clay, which albeit it be very rich for Corne, is moſt poore for theſe ſeedes, when you would reduce and bring it to beare Hempe or Flaxe, which neere unto the Sea Coaſt, is of greater price and commodity than Corne any way can be, eſpecially adjoyning unto any place of fiſhing, in reſpect of Nets and other Engines, which is to be made of the ſame, and which being daily waſted and conſumed, muſt likewiſe be daily repleniſhed: You muſt firſt with a ſtrong plow, fit for the nature of ſuch land, plow up ſo much ground as you intend to ſow Hempe or Flaxe upon, about the middeſt of *May*, if the weather be ſeaſonable, and the ground not too hard: if otherwiſe, you muſt ſtay till a ſhower doe fall, and that the earth be moiſtned, then ſhall you hacke it and breake the clottes in ſmall pieces, then with the ſalt Sea-ſand, you ſhall ſand it very plentifully, but if that be not to be gotten, and that you be very well aſſured of the naturall richneſſe of the earth, you ſhall then ſand it with the beſt red ſand you can get or finde neere unto you, and upon every Acre of ground you thus ſand with freſh ſand, you ſhall ſow three buſhels of Bay ſalt, and then plow up againe the earth, ſand and ſalt together, which would be done about the latter end of the yeare, as after *Michaelmas*,

and

and ſo let the ground reſt till ſeede-time; at which time, you ſhall firſt before you plow it, go downe to the low rockes on which the Sea beats, and from thence, with drags, and other Engines, gather thoſe broad leaved blacke weedes, which are called Ore-wood, and grow in great tufts and abundance about the ſhoare, and theſe weedes you ſhall bring to your Hemp-land, and cover it all over with the ſame, and then you ſhall plow it againe, burying the weedes within the earth.

And herein is to be obſerved, that in any wiſe you muſt lay theſe weeds as wet upon the land, as when you bring them out of the Sea, provided ſtill, that you adde no other wet unto them but the ſalt water, for ſo they are of all ſoyles or manures whatſoever, the onely beſt and fruitfulleſt, and moſt eſpecially for theſe ſeeds, and breed an increaſe beyond expectation.

When you have thus plowed over the ground, you ſhall then hack it againe, and then ſowe it with either Hempe or Flaxe-ſeede, which you pleaſe, and after it is ſo ſowne, you ſhall then harrow it (and not before) and you ſhall be carefull to harrow it into as fine mould as you can, and this mould is likely to runne fine enough, as well by reaſon of the fertility, as alſo of the mixture; yet what clots you cannot breake with your Harrows, thoſe you ſhall breake with your clotting-Beetle, and ſuch like tooles: then after the firſt great ſhower which ſhall fall after your ſowing, you ſhall runne over your land thus ſowne with your backe Harrowes, that is, with a paire of large Harrowes, the wrong ſide turned upward, to wit, the teeth turned from the earth, and the backe towards the earth:

earth; and if neede be, you ſhall lay upon the Harrowes ſome indifferent heavie piece of wood which may keepe the backe of the harrows cloſer to the ground, and ſo go over all the earth, and lay it as ſmooth and light as is poſſible, without leaving the ſmalleſt clot that may be unbroken. Now if the ground be ſowne with Hempe, you ſhall not thinke of weeding it at all, becauſe Hempe is ſo ſwift a grower, and ſuch a poyſon unto all weeds, that it over-runneth, choaketh, and deſtroyeth them; but if it be ſowne with Flaxe or Line, which is a much tenderer ſeede, and bringeth forth more tender leaves and branches, then you ſhall watch what weeds you ſee ſpring up, and in their firſt growth plucke them up and caſt them away, till you behold your Flaxe or Line to be growne above the weeds, and then you may let it alone alſo, for after it hath once gotten height, it will not be over-growne with weeds.

Making of ill earth beare, &c.

Now touching the other ſoyle, which through the extreame barrenneſſe thereof, refuſing to bring forth any good fruit at all; you ſhall in all points dreſſe it as you dreſſe your plaine clayes, deſcribed in the ſecond Chapter of this Booke, beginning at the ſame time of the yeere that is then appointed, or (if more neceſſary occaſions hold you) if you beginne later, it ſhall not be amiſſe, and then at *Michaelmas* you ſhall plow it over the ſecond time, and manure it with the Sea weedes, and ſo let it lie at reſt till *March* (which is ſeed-time) and then plow it againe, and manure it with the Sea-weeds againe, and after the plowing, you ſhall hacke it, and if in the hacking you finde the earth ſtiffe and tough, then you ſhall harrow it before you ſow it, then ſow it and harrow it againe, breaking the earth ſo ſmall, and laying it

ſo

ſo ſmooth as poſſible you can, uſing the helpe both of the clotting beetles, and all other tooles which may be availeable for breaking the earth, and making the mould as fine as any aſhes, then after the firſt great ſhower of raine, perceiving the ground to be well moyſtned, you ſhall inſtead of the backe harrowes (which upon this earth may be too light) take the great rowler which is deſcribed in the Book of the *Engliſh Husbandman*, being a great round piece of Timber of many ſquares, drawne either by Horſe or Oxen, but a ſingle Horſe is beſt, both in reſpect of much treading the ground, as alſo for the ſwift going away or drawing of the ſame: for the ſwifter it is drawne, the better it breaketh the ground, and the lighter it leaveth the mould: and with this rowler you ſhall runne over and ſmooth your ground very well, leaving noe clot unbroken, and ſo let it reſt.

Weeding. As for the weeding of this ground, you ſhall not reſpect it at all, for naturally it will put up no weede, the very ground of it ſelfe being a very great enemy thereunto, nor ſhall you need to dreſſe this ground in the forme before ſaid, above once in eight or ten yeares: onely every ſeed time when you plow it (as you ſhall not need to plow it at any time, but ſeed-time onely) you ſhall before the plowing, cover or manure the Land with the ſea-weed before ſpoken of, which will give ſtrength enough to the ground, without any other aſſiſtance.

CHAP.

CHAP. 16.

The maner of ſtacking of all kind of Graine or Pulſe with greateſt ſafety, and leaſt loſſe.

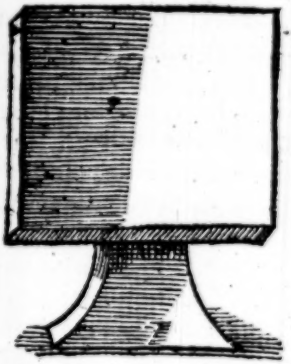
IN theſe barren and hard Countries, of which I have formerly written, all ſorts of buildings are exceeding coſtly and ſcarce, both in reſpect of the clime, which is commonly moſt extreme cold, mountanous, and much ſubject to ſtorme and tempeſt, as alſo through the great want of Wood and Timber, which in thoſe hard ſoyles doth hardly or never proſper; and therefore in ſuch places building muſt be both ſmall and deere, ſo that it will be very hard for the Husbandman to have houſe-roome for all his Corne, but that of neceſſity he muſt be enforced to ſtack much, or the moſt part of his Corne without the doores, which albeit it be a thing very uſuall in this Kingdome, yet is it in many places ſo inſufficiently done, that the loſſe which redounds thereby (partly by the moyſture of the ground, which commonly doth rot and ſpoyle at leaſt a yard thickneſſe of the bottome of the Staek next the ground, and partly through Mice, Rats, and other Vermine, which breeding in the Stack, do eate and devoure a great part thereof; as alſo through many ſuch like negligent cauſes) is greater than a good Husband may with his credit be guilty of, or a profitable Husband will by any meanes ſuffer to be loſt ſo negligently.

To ſhew then the manner how to ſtack or mow your corne without the doores, in ſuch ſort, as neither the ground

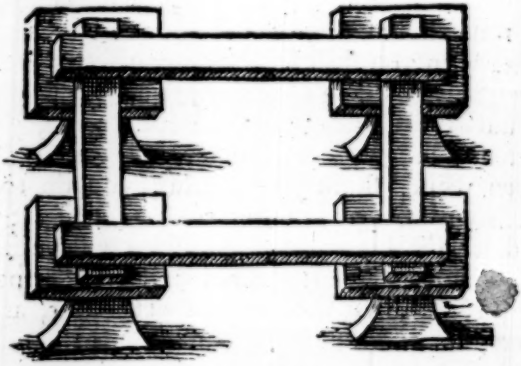
ground ſhall rot it, nor theſe Vermines deſtroy it, nor any other loſſe come to it by way of ill Husbandry, you ſhall firſt cauſe foure peeces of timber, or foure ſtones, to be hewed broad and round at the nether end, like the faſhion of a Sugar-loafe, or this figure.

And theſe peeces of wood or ſtone ſhall be in length three foot or thereabout, and in compaſſe or bredth at the bottome, two foot, or a foot and a halfe, and at the top not above one foot: theſe foure peeces of wood or ſtone you ſhall place in your ſtack-yard, or other convenient place neere your thraſhing-floore, and you ſhall place them foure ſquare, of an equall diſtance one from another, then you ſhall cut out foure ſmooth boards of two inches and a halfe thick at the leaſt, and full three foot ſquare every way, and theſe boards you ſhall lay upon the heads or narrow tops of theſe ſtones or peeces of timber, according to this Figure.

Then



Then ſhall you take ſtrong over-lyers of wood, and lay them foure-ſquare from one board to another, according to this Figure.



And then upon thoſe over-lyers you ſhall lay other ſmaller poles cloſe one by another, and then upon them you ſhall mow or ſtack all your Corne, whether it be Wheat,

Wheat, Barley, Oates, Peaſe, or any other kind of grain, and be ſure if you make your Stack handſome and upright, which conſiſteth in the Art and workmanſhip of the workman, you ſhall never receive loſſe in your corn, for the raiſing of it thus two or three foot from the ground will preſerve it from all moyſture or hurt thereof, and the broad boards which cover the foure ground poſts will not ſuffer any Mice or other Vermin to aſcend or come into the ſame.

Now for the manner of laying your Corne into the Stack, you ſhall be ſure to turne that part of the ſheafe where the eares of the Corne lye ever inward into the Stack, and the other which is the ſtraw end, you ſhall ever turne outward, and by that meanes you ſhall be aſſured that no flying fowle, as Pigeons, Crowes, and ſuch like, can do you any hurt or annoyance upon the ſame: Laſtly, you ſhall underſtand, that you may make theſe Stacks either round, ſquare, or long-wiſe, yet round is the ſafeſt, and if you do make them long-wiſe, then you ſhall ſet them upon ſix ground poſts, or eight, according to the length and proportion you would have it, and after your Stack is made, you ſhall then thatch it very well to keep out the wet; alſo if when you do Stack your Wheat, you do top your Stack with Oates or other corſe Graine, it will be ſo much the better, and the Wheat will lye in greater ſafety, for no part of a Stack well made, eſpecially a round Stack, will ſo ſoone take wet or hurt, as the top thereof.

CHAP.

CHAP. XVII.

The diſeaſes and imperfections which happen to all manner of Grain.

Albeit the manner of ſtacking & laying up of Corn or Grain in the form before ſhewed, may to every one give an aſſurance for the ſafe and profitable keeping thereof as long as it endureth therein, and abideth in the eare, yet becauſe divers neceſſities may compell the Husbandman to thraſh out his Corn, as either, for preſent uſe of Straw, Chaffe, Garbadge, or other commodityes needfull nnto him (as the ſeaſon of the year ſhall fall out) I think it moſt neceſſary in this place to ſhew how all manner of Grain and Pulſe, of what nature ſoever, may moſt ſafely and profitably be kept from all manner of annoyances, or corruptions whatſoever, being a work of that utility and goodneſſe, that not any belonging to the Husband-man doth exceed it: Nor ſhall it be ſufficient to ſhew the offences and diſeaſes of Grain, with their cures and healthfull preſervations, whileſt it is in the Husband-mans poſſeſſion, but alſo whileſt it is in the earth, and at the mercy of cold, heate, moiſtneſſe or drineſſe, and not onely ſubject to the malignant, influences of Starres and Planets, with the increaſing and decreaſing of the moone and her operations: but alſo of divers other hurtfull verminsias birds, wormes, piſmires, dorres, ſnailes, moales, and other ſuch like: ſome whereof conſume and devour the Graine ere it ſprout, others in ſprouting, when the kernell is rotten, and turned to ſweet ſubſtance, and others after

it is ſprouted, by devouring the firſt tender leaves, before they have any ſtrength to appear above the earth, being as it were but ſoft white threds, not changed into the ſtrength of green, becauſe the aire and Sunne hath not yet lookt upon it.

crows, pigeon, and birds.

To begin then with the firſt enemies of corne or graine, after it is throwne into the earth, there is none more noyſome then *Crowes*, and *Choughes*, and other ſmaller birds, which flocking after the ſeeds-man, wil in a manner devour and gather up the graine as faſt as it is ſown; for as according to the old ſaying, *Tha many hands makes light work*; ſo many of their mouthes (being creatures that ever fly in flocks together) and their much nimbleneſſe in devouring, ſoone robbe the earth of her ſtore, and deprive the labouring Husband man of very much profit, and the Graine which theſe creatures doe moſt conſume, is all manner of white corne, as wheate of all kinde, Rye, and Oates, as alſo Hempe-ſeede, Lin-ſeede, Rape-ſeed and ſuch like: Neither are they onely offenſive during this time of ſowing, but alſo after it is ſowne and covered, digging it with their ſtrong bils out of the earth, and ſo making the waſte greater and greater.

The cure.

The prevention or cure for this evill, is divers, as the affections of people, and cuſtome of Countreyes do inſtruct them, for ſome (eſpecially the *French men*) uſe when they ſow theſe grains and ſeeds, firſt to ſprinkle it with the dregs or lees of their bitterest oyles, which when theſe devouring fowles do taſte, they refuſe to do any further hurt: others uſe to ſow Pigeons dung or Lime with their ſeed, which ſticking unto the graine, the unſavorineſſe thereof will make the

the fowl caſt up the graine againe, and leave to doe further hurt: But foraſmuch as theſe medicines cannot ever be had, nor are ever wholſome for every ground, the onely beſt and ſafeſt meanes to prevent this evill, is to have ever ſome young boy with bow and arrowes to follow the ſeeds man and Harrowes, making a great noiſe and acclamation, and ſhooting his arrowes where he ſhal ſee theſe devourers light, not ceaſing, but chaſing them from the land, and not ſuffering them at any time to light upon the ſame; and theſe ſervants are called Field-keepers, or Crow-keepers, being of no leſſe uſe and profit (for the time) then any other ſervant whatſoever, nor is it ſufficient to have the Field keepers, for the bare time of ſeed onely, whileſt the grain is in ſowing, but he ſhall alſo maintain them until ſuch time as you ſee the grain appear above the earth, which for Wheat or Rye, becauſe they are winter ſeeds, and ſo longer in ſprouting, will ask a full month, for all other ſeeds which are ſowne in the Spring or Summer, a fortnight is ful ſufficient: and this Field-keeper ſhall not fail to be in the field an hour before Sun in the morning, and ſo continue till half an hour after Sun-ſet in the evening, for at the riſing and ſetting of the Sunne, is ever done the greateſt miſchief, for then are all creatures moſt eager and hungry: and though the indurance may promiſe much pain and trouble, yet queſtionleſſe the labour to any free-ſpirit, is both eaſie, and pleaſant.

Alſo if your Field-keeper inſtead of his bow and arrowes do uſe to ſhoot off a Muſket or Harquebuſh, the report thereof will appear more terrible to theſe enemies of Corne, and the profit thereof will be a great deale more: for a ſhot or two of powder will Additions

ſave more corn, then a weekes whooping and ſhouting; onely you muſt obſerve, that your field-keeper uſe no bullet or haile-ſhot, for ſo he may turn ſcarring to killing. Now touching the deſtruction which theſe creatures make of corn after it is ſtackt up; by tearing of the thatch, and digging holes and pies therein, to prevent that, you ſhall cauſe the thatcher to ſcatter upon the thatch great ſtore of aſhes of any kind, or elſe Lime, that as the Pigeons or Crows, teareth up the ſtraw, the Lime or aſhes will ſparkle into their eyes and nares, which they will not endure. as for thoſe parts of the Stack, which cannot be thatcht, as the ſides and ends; upon them you ſhal pricke divers ſcar-crows, as dead crows, or dead Pigeons, or any other rags, or the ſhape of a man, made either of thumb-rops of hay or ſtraw, or elſe ſome old caſt away apparell, ſtopt with ſtraw, and ſo fixed on the ſtack; alſo in this caſe you may uſe Clap mils, or ſuch like toyes, which make a great noiſe; But to conclude the beſt prevention for theſe creatures (if you want ability to maintain a Field-keeper) is to take long lines of pack-thread, and in them to knit divers feathers of divers colors, eſpecially white ones, & with little ſtakes ſo to faſten them over the Corn, that with every breath of wind the feathers may dance and turn about, and the nearer that theſe Blinkes or ſcars come to the ground (when the corn is new ſowne ſo much the better it is, leaſt the fowle finding away to creepe under them, begin not to reſpect them; ſo that a hand or two from the ground is ſufficient, provided that the feathers and ſcarres have liberty to play and move.

But if it be to ſave corn in the ripening, that is to ſay

ſay a little before it be reapt, when the eare begins to harden, or when it lieth in ſingle ſheaf upon the land, for then fowl and birds do as great miſchiefe, as at any other ſeaſon, it ſhal then be fit that you raiſe theſe lines or ſcars upon higher ſtakes, ſo as they may play as much above the eares of corn, as before they did above the earth: and among theſe ſcars thus made upon lines in ſundry parts of the field, you ſhall upon other ſtakes, place many other bigger ſcars, as dead crowes, pies, gleades, pigeons, or ſuch like, as alſo the proportion of man formerly ſhewed you, or any rags of cloath being black, fowl, and vgly, like bakers malkins, & then this, there is no ſafer way for the defence of grain, or corne, from theſe birds, and ſuch like.

The next great devourers or conſumers of graine are Piſmires or Ants, which although it be but a little creature, yet it is ſo labourſome, that the graine which they carry away or deſtroy by eating, amounteth to a great quantity, and the miſchief which theſe little Vermines do, is, after the corn is covered in the ground, and before it ſprout, for they creeping in at the little chinkes of the earth, and finding the corne, either drag it out, or eat it; ſo that it cannot grow, & the graine which they moſt hurt, is all manner of white corn, eſpecially your fineſt and ſmalleſt Wheat, for the skin or hull is thinneſt, and the kirnell whiteſt and ſweeteſt: alſo to barly they do much hurt, eſpecially that which is fulleſt and beſt, and likewiſe to Rye, Hempe-ſeede, Lin-ſeede, and Rape-ſeede; as for Oats, becauſe it is double hull'd, and alſo your great hole ſtraw Wheate, and Polard wheat, which is thick hald, their hurt is not ſo much to them, and unto pulſe Of piſmires.

nothing at all, becauſe they are too heavy, too thicke skinned, and too bitter in taſte.

The cure. The beſt cure and prevention for theſe Piſmires is to ſearch your Corn-fields well, eſpecially under hedges and old trees, and on the top of mole hills, and if you find any beds or hils, of Ants or Piſmires, preſently after ſun ſetting, with hot ſcalding water to drown the beds or hils, or with wet ſtraw and fire, to make ſuch a ſmoak upon them, as may ſmother them to death, alſo if you meanure your Corn-lands with aſhes, lime or ſalt ſand, you ſhall be well aſſured it will never breed Piſmires.

Of Dores. Next unto theſe, your Dores or great black Clocks are vehement deſtroyers of all kind of Corne both white Corn and Pul ſe, whilſt it lyeth dry in the earth, and before it ſprout, for after it beginneth to rot, they do no more touch it, and theſe Dores deſtroy it in the ſame manner, as the Piſmires do, by creeping in at the ſmall crevices of the earth, and finding the grain do as long as it is dry feed thereon, and though they are no hoarders, or gatherers together of the grain, keeping it in heapes in dry places as the Piſmires and other vermine do, yet they are great feeders thereon, and that continually, beſides they will ever chuſe out the fulleſt and beſt Corn, leave the leaner, whereby they do the Husbandman double injury, as firſt to devour, and then to devour but the beſt only.

The cure. The cure or prevention for theſe Dores, or blacke Clockes, is in Seed-time to make great ſmoakes in your corne-fields, which will preſently chaſe them from hence, for they are the greateſt enemies that may be to all manner of ſmoak: but if that be not ſufficient, then

then immediately before you ſow your Corn, you ſhall very lightly ſow your land with ſharp Lyme, and whenſoever the Dore ſhall find the ſmell or taſt thereof, preſently he will depart, or if he eate of the Graine that toucheth the Lyme, it is as preſent poyſon unto him, and there he dyeth.

Of Field Rats and Mice.

¶ After theſe, your Field Rats and Mice are very vehement deſtroyers of all manner of Grain or Seeds before they ſprout, eſpecially all ſorts of Wheat, and all ſorts of pulſe, becauſe for the moſt part thoſe kind of Grayns in many Soyls are ſown under furrow, and not harrowed, ſo that the furrows at firſt lying a little hollow, theſe Vermines getting in between the earth and them, will not only devour and eat a great part of the Grain, but alſo gather together great heapes thereof into their neſts, as is often ſeen when at any time their neſts are found, ſome having more, ſome leſſe, according to their labours.

And albeit in other ſoyles where the grayn is ſowne above furrow, and ſo harrowed in, and laid much more cloſe and ſafe, they cannot do ſo much hurt as in the former, yet even with theſe they will with their feet dig out the corn in great abundance, and though in leſſe meaſure, yet do hurt that is unſufferable; ſo that to conclude, neither Rye, Barley, Oats, nor any other ſmaller and more tender ſeeds, are free from their annoyance and deſtruction.

The cure.

Now the cure and prevention for theſe Field Rats, or Mice, are divers, according to the opinions of divers Authors, and divers of our beſt experienced Husbandmen: for ſome uſe in the Dog Dayes, or Canicular Dayes, when the fields are commonly bare, to ſearch out the holes and neſts of theſe Rats and Mice, which

are eaſily known, being little round holes in the earth made ſo round and artificially as if they were made with an *Auger*, no bigger then the body of the creature that was to lie in it: and into theſe holes they uſe to put a few *Hemlock ſeeds*, of which when the beaſt taſts it, is preſent death unto them: Others uſe to ſprinkle upon the land, *Helleber* or neeſing powder mixt with Barley meal, of which the Mice and Rats will greedily feed, and it is deadly bane and preſent death unto them.

Laſtly, (and which is the beſt medicine) if you take a good quantity of ordinary green glaſſe beaten alſo to pouder, and as much Copporas or vitrial beaten alſo to pouder, and mixe them with courſe honey, till it come to a paſte, and then lay it in the holes, and moſt ſuſpicious places, and it will neither leave Rat nor Mouſe about all your fields, but ſodainly deſtroy them.

Of Worms. The next great deſtroyers of Corn and Grain, are *Wormes*, and they deſtroy it in the ſprouting; then when the ground hath rotted it, and the white or milkie ſubſtance breaking open the upper husk, ſhooteth forth in little white threds at both ends, upon which whileſt it is ſo moiſt and tender, the *Worm* feedeth extreamly, and ſo devouring up the ſubſtance or ſperme, is the cauſe the Corn cannot grow or get out of the ground, and theſe *Wormes* being as it were the main citizens within the earth, are ſo innumerable, that the loſſe which is bred by them is infinite.

The cure. Now the cure or prevention for theſe Wormes is diverſly taken: for ſome Husband men uſe but onely to ſtrike into the Plow Reſt, and under the loweſt edge of the ſhebord certain crooked ſpikes of iron of great nailes half driven in, and turned back again, with which as the Plow runs tearing in the ground, and turnes up the

the furrow, thoſe pieces of Iron kill and tear in pieces ſuch Worms as are either within or under the furrow that the Plow caſts up, and this is ſure a very good huſbandly practice, but not ſufficient for the deſtroying of ſuch a ſecret hurtful vermine which is ſo innumerable, and lies ſo much concealed: therefore, more curious husbands uſe beſides this help of the Plow, to take Oxe dung and mix it with ſtraw, and then to burn it up in the land, making a great ſmoke over all the land, immediatly before you plow it for ſeed, and it is thought that this will kill all the Worms which lie ſo high in the earth, as to hurt the Corn.

Others uſe before they make either the mixture or the ſmoke to wet the ſtraw in ſtrong Lye, and then adding it to the Dung, the ſmoake will be ſo much the ſtronger, and the Worms killed the ſooner; or if you ſprinkle ſtrong Lye upon your ſeed before you ſow it, there is not any worme that will touch the grain after: Alſo, if you take Hemp and boyl it in water, and with that water ſprinkle your ſeed before you ſow it, not any worm will come neer to touch it.

Yet it is to be obſerved in this rule of wetting your Seed Corn, that by no meanes you muſt wet your Seed Rye, for it is a Grain ſo warm and tender that it will neither endure cold, wet, nor ſtiff ground, inſomuch that the Plowman hath a Proverb, that Rye will drownd in the Hopper; that is to ſay, it muſt neither be ſown on wet ground, nor in a wet day, ſince preſent ſhowers are apt to deſtroy. *Of Rye not to be wet.*

Laſtly, it is thought that oft plowing your ground in the wane of the Moon is a very good meanes to deſtroy both.

Touching that practice which many uſe to gather the worms

worms from their lands at Sun-riſe, in bright dewie mornings, and Sun-ſet when the wormes couple above the earth, I hold it more fit for ſmall gardens, then larg Corn fields.

Of Snailes. The next great deſtroyers of Corn are Snailes, and they deſtroy it after it is ſprouted, feeding upon the tender white threds and ſtons which ſtart from the ſeed and would riſe above the earth, being the ſtemme or ſtalk on which the eares ſhould grow (were it not devoured and eaten up by theſe Snailes, and ſuch like Vermine) as ſoon as it begins to peepe up, or as it were to open the earth, whereby it is driven back and forced to dye in the earth: for theſe creatures ſucking upon the tender ſweetneſſe, deprive it both of life and nouriſhment.

The cure. The cure and prevention for this evill, is to take the ſoot of a Chimney, and after your Corn hath beene ſown a week or ten dayes, or within two or three dayes after the firſt ſhower of Rain which ſhal fall after the Corn is ſown; you ſhall ſow this ſoot of the Chimney thinly over the land, and not a Snaile will endure to come thereon: Others uſe (eſpecially in *France*, and thoſe more fertile Countries) to take common Oyle lees, and after the Corn hath been ſown and is ready to appear above ground, to ſprinkle it all over the lands, by which meanes no Snayle or ſuch like creature will endure to come neer the ſame.

Of Graſhoppers. The next great deſtroyer of Corne is accounted the Graſhopper, and he alſo deſtroyeth it after it is ſprouted, and appeareth above ground, as the Snail doth, but ſomewhat more greedily, for he not only feedeth on the tender white ſtrings, but upon the firſt green leaves that appeare alſo; by which meanes the Corne is not able

able to ſpring or bring forth a ſtemme or ſtalk to bear the ear upon; or if it do put forth any, yet it is ſo ſmall weak and wretched, that the ear growing on the ſame, is withered and lean, and the grain dry and blaſted, and no better then chaff; nor is there any corn that ſcapeth the deſtruction of the graſhopper, for he generally feedeth on all: firſt, on wheat and Rye, becauſe they are the earlieſt, then on the barly and oats, and laſtly on pulſe upon whoſe leaf and bloſſome he feedeth, whileſt the firſt is ſweet and pleaſant, or the other green.

The cure. Now the cure or prevention for theſe creatures, is according to the opinion of ſome Husbandmen, to take Worme-wood, and boyle it well in water, till the ſtrength of the Worm-wood be gone thereinto, and then with that water in the moneth of May to ſprinkle all your corn over when the ſun is riſing or ſetting: and not any Graſhopper wil come neer, or annoy the ſame. Others uſe inſtead of Worm-wood to boil centuary, and to uſe the water thereof in the ſame manner as aforeſaid, and find an equall and right profit in the ſame, but it is moſt certain that any bitter decoction whatſoever uſed and applied as aforeſaid, wil not leave one Graſhopper about your Fields, for any bitterneſſe is ſuch an enemy unto them, that they cannot live where they feel any taſt thereof.

Of Moales. The laſt offence of living creatures belonging to Corn or Grain are Moales, which not only feed upon it after it is ſprouted and ſpindled by eating up the roots thereof, and ſo conſequently by killing the whole Corn: but alſo by their digging and undermining of the earth, do roote up the Corne and deſtroy it in moſt wonderfull manner, for where they make their haunts, or are ſuffered to digge, there they wil deſtroy almoſt

almoſt half an acre in a day neither made they choice either of Ground or Grain, for all grounds and grains are alike, if the ground be not to wet, or ſubject to inundation, or over-flowes (as for the moſt part come-ground are not) for above all things Moales cannot indure wet ground or earth of too moiſt quality.

The cure. Now the beſt cure or prevention againſt theſe creatures, is to find out their trenches and paſſages which are moſt plain and eaſie to be known by the turning up of the new earth, and digging croſſe holes in the ſame, to watch either the going forth, or the comming back of the Moal, and when you ſee her caſt, to ſtrike her, with an iron fork made of many grains, as eight or ſixe at the leaſt, and ſo to kill and deſtroy them; which ſtill is ſo generally known amongſt Husbandmen, that it is become a trade and occupation among them, ſo that it needs no further diſcription, & the rather, in as much as three or four pence a ſcore, you may have any ground cleanſed of Moals whatſoever.

Offences from the influence of the heaven. Now there be ſome others which have not this art of killing or catching of Moales which onely do take brimſtone and wet ſtinking ſtraw, or any thing elſe that will make a ſtinking ſmoake, and putting fire thereto, ſmoak all the places of their haunts, and by that meanes drive them all clean away from the corn lands: many other practiſes they have, but none ſo good certain, and probable as theſe already declared.

Thus far I have ſpoken of thoſe offences which proceed from living creatures, I will now intreat of theſe which come and grow from the Influence of the heavens, being malignant vapours which ſtriking into the earth, do alter the ſweet and pleaſant nouriſhment thereof, and change it, into bitterneſſe and rottenneſſe, where

by the Corn is either ſlaine out-right, withered and made lean and unkindly, or elſe the kernell turne to a filthy blackneſſe, being bitter, dry, and duſty, like unto ſmoak, which the Husbandmen calleth ſmuttineſſe, or mildewing, commeth another way, as namely by over-rankneſſe, or too much fatneſſe of the earth, and this happeneth moſt commonly only to wheat, for if blackneſſe happen to any other Grain, it commeth of blaſtings, or other malice of the Starres, for rankneſſe of the ground in Barley, Rye, or Oates, only makes them lye flat to the ground, the ſtalke not being able to ſupport the multiplicity of the eares, and ſo by that means the graine wanting his true nouriſhment, grows light, withered and of no validity; now that this is moſt eaſie to be found out, the rankneſſe of the growing Corne, riſing as it were in cloſe bundles together, and the deep blackneſſe of the greene blades, will with ſmall travell ſhew you. Of ſmuttineſs and mildew.

This to cure and prevent, it ſhall be good before you ſow your Graine, to ſow your land lightly over with chalk, for that wil abate his over rankneſſe. The cure.

There be other malignant qualityes which proceed from the influences of the Heavens, or rather from the qualityes of the Planets or Elements, which do many dangerous hurts unto Corn, as namely the Haile, the Lightning, the Thunder, or the Planet-ſtroke, or blaſting, for all which the ancient Husbandmen have ſuggeſted ſeverall Cures, as namely for the Haile, to plant the White-Vine, or ſtick the branches thereof in the Corne-field. For the lightning, to cloſe a hedge-Toade in an earthen pot, and burying her in the Corn-field, or to hang up the feathers of an Eagle, or a Seale skinne, or to plant Lawrell therein: For the Thunder Additions.

Thunder, to ring Bels, to ſhoot of great Ordnance, or to burn ſtinking weedes in the Corne-field: And for Blaſting, to take the farre horne of an Oxe, and mixing it with dung, to burn it in the Corn field, or to take the branches of the Bay tree, and to plant them in the corne-field: but in as much as all theſe, and many other the like, ſmell rather of conjuration, charme, or exorciſme, then of any probability of truth; I will neither here ſtand much upon them, nor perſwade any man to give further credit unto them, then as to the vapours of mens braines, which do produce much many times out of meer imagination; and ſo I will proceed unto thoſe things which are of farre greater likelyhood.

Of froſts. The next evill which happeneth unto Corn or grain is that which commeth by froſts and ſharp nipping colds, which ſtarving the root, and binding up all nouriſhment, maketh the corn dry, wither, and never proſper; and then the violence of the froſts, here is nothing more bitter to plants and ſeeds, for ever Raſor-like it cutteth the veins and ſinews in pieces, and as ſharp needles pricketh the heart of every growing thing, for as the fire which is moſt hot, when it rageth, burneth, and conſumeth all things, ſo the froſt which is moſt cold when it continueth, ſtarveth, and choaketh, or ſtifleth whatſoever it embraceth.

The cure. Now the cure or prevention for thoſe evils which do happen to graine by theſe great froſts, is as ſome Husband-men ſuppoſe, to cover the land over when it is ſowne, with aſhes, others ſpread ſtraw or rotten litter upon their Corne, and not any of them but it is ſufficient to prevent the worſt injury that froſt can do.

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The moſt malignant quality which offendeth graine is myſt and fog, which being naughty vapours drawn from the infected parts of the earth, and fall upon the corn, do not onely make the graine leprous, but alſo infecting the better earth after the kindly nouriſhment thereof, and as it were diſtilling corruption in the veins, makes al that depends thereupon moſt leprous and unwholſom, and thereby altereth the quality, quite turning ſweetneſſe into bitterneſſe, fulneſſe into emptineſſe, and goodneſſe into badneſſe, to the great loſſe of the Husband-men, and the much diſreputation of the ground. Myſts and fogs.

Now the cure and prevention of this evill, according to the opinions of all the beſt Husbandmen, is to take weeds green, the twigs of bramble and other bruſh wood, wet ſtraw or any ſuch like ſtuffe, and binding them in great bundles, to put fire thereto, making a great and violent ſmoke, and then taking the advantage of the wind, to walk up and down the field and ſmoak it which is thought a certain remedy to take away thoſe inconveniencies which happen by violence and poiſon of theſe myſts and fogs. The cure.

Now to conclude, the diſeaſes and infirmities which happen to corne whileſt it is in the field, there is not any formerly ſpoken of more dangerous, or of viler quality then the reaping, mowing, or gathering in of Corn, wet, or too greene, and unhardned, for ſuch moiſture, when the corne is sheated up cloſe together, or ſtackt or mowed up, forthwith gathereth heat, and either ſetteth the corne on fire, or elſe the moiſture being of leſſe quantity, and not apt to flame; yet it corrupteth the graine and ſtraw, and breedeth a ſtinking mouldineſſe or rottenneſſe about it: ſo that Corn reapt wet.

the

the grain either becomes dung and dirt, or at leaſt ſo ſtinking and unſavory, that it is good for no uſe or purpoſe, as is dayly ſeen where careleſſe husbands gather in their grain without reſpect or government, making the old proverb good, that haſt ever brings waſt.

The cure. The cure and prevention of this evill, is the wel husbanding and managing of the harveſt, as firſt with a carefull and well judging eye to look upon your corn, and to know by the hanging downeward of the eare, (looking as it were backe to the ground) and by the hardneſſe of the graine, whether it be ripe or no; then to look into the cleanneſſe of the corne, as whether it be full of greenes, as graſſe, weeds, and ſuch like: or clean of it ſelf without any mixture: if you find there be any weeds mixt with it, then you may reape it ſo much the ſooner though the kernel be not ſo wel hardned as you would wiſh, and above all things have a care never to ſhear Corne in the raine or wet, no not ſo much as with the mornings or evenings dew upon it, but even in the heat and brightneſſe of the day. Then having reapt your Corne ſo full of graſſe and weedes, you ſhall by no meanes ſheafe it, but ſpreading it thin in the ſunne, let the graſſe wither all that day, which when you perceive to change colour and grow dry, then bind it up in ſheafes, and let it lye ſingle a day, that the wind and Sunne may get into it, and dry the greenes more ſufficiently, then lay it in ſtouckes of ſix or eight ſheafes a peece, and in thoſe ſtouckes, and turne the eares ſo inward that the other bigger ends may defend them from all rain, wet or dew that may fall upon them, then a day or two after, lay them in ſtouckes of twenty or of four and twenty ſheafes a peece, and in thoſe ſtouckes, let them take a ſweat, then break them

open

open in a bright Sunne shine day, and letting the aire passe thorow them to dry them, forthwith leade the graine home, and house it or stack it in such sort as was shewed in the former Chapter, and be sure the grain thus ordered and dried can never take hurt: but if the season of the year fall out so extraordinay evill and full of wet, that by no meanes you can get your Corne dry home (which although it be seldome seene yet it is possible to be seen) in this case you must bring it home as well as you can, and having your Kilne well ordered and bedded, you shall lay as many sheaves thereon, as it can containe, and turning and tossing them over a very gentle fire, by slow degrees dry them very perfectly as near as you can, with no greater a heat then that which the Sunne giveth, and then mowe and stack them up at your pleasure, for the ayre will sweeten them againe, and take away all smell of smoke or other annoyance; onely observe, not to stack them up whilst the fire or heat is in them, but when they are cold, and so they will be as sweet as may be.

Now it is not amiss that I speake here a word or two of washt Corn, or the washing of Corn: True it is (as before I have written) that all sorts of Wheat whatsoever are subject, either by the rankness of the ground, blasting, or else mildewing, to a kind of filthy sooty blackness, as is already shewed; and this sooty Corn is taken two ways, generally and particularly: generally, if the whole land be stricken, and no corne saved, but all spoyled, which is called mildewed; or particularly, where but some certain eares are struck, or some certain part of the grain, as when it is blacke at both ends, yet full and sound in the middest, and this

Of corn washt

this is called ſmutcht corn, being disfigured in part, and not in all. This ſmutcht Corn which is ſtrucken here and there, if the blaſted eares be not culled out from the other, (which to do is an husbandry exceeding good and very worthy) when it commeth under the flayle, the duſt of thoſe black blaſted eares will ſo foul all the reſtof the corn, that it wil look black and ill favored, & ſo become unſerviceable and unmarketable; for the blaſted corn is both bitter and unwholſome: In this caſe you muſt of force waſh thiscorne, and you muſt do it in two or three waters, till you ſee all the blackneſſe quite gone; which done, then drain away your water cleane, and laying the corn on faire window cloathes, or coverlids, lay it in the heat of the Sunne, and ſo dry it againe till it be ſo hard that it will grind: But if the time of the yeare will not ſerve for the Sunnes drying it, then you ſhall dry it on a Kiln with a very ſoft and gentle fire, and then coole it in the ayre to recover the ſweetneſſe again, and then the Corn is as ſerviceable as any other, onely for ſeed it will by no meanes ſerve, both by meanes of the blaſting, which makes the kernell imperfect at both ends where it ſhould ſprout, as alſo the too much drying thereof, by which it is ſo much hardned, that theground hath no ſtrength to reſolve it, therefore it is the office of every Husbandman when he chuſeth his ſeed corn, eſchew by all meanes this waſht corn as a grain that is loſt in the earth, and will by no meanes grow.

To know waſht corne.

Therefore that you may know waſht corne from all other corn, and ſo not to bee cozened by any deceit in the ill Husband-man, you ſhal take it upinto your hand, and if the corn look bright, cleer, and ſhining, being

being all of one entire colour, without change or difference, then be sure the corn is unwasht and perfect.

But if you find it look whiter at the ends then in any other part of the corn, and that the whiteneſſe is black and not ſhining, ſo that there is a changeable colour in the corn then be aſſured that the corn is waſht, and then by no meanes apt for ſeed or increaſe.

Againe, put three or four graines into your mouth, and chaw them, and if then the taſte be ſweet and pleaſant, and grind mellow and gently between your teeth; then is the corn not waſht: but if it have a bitteriſh, or fleſhy raw taſte, and grind hard between your teeth, or with much roughneſſe, then hath the corn been waſht, and dryed againe, and is not good for ſeed: alſo when corn is more then ordinarily moiſt, or more then ordinarily dry, both are very ill ſignes, and ſhew either imperfect corn, or imperfect keeping, for the beſt and good corn indeed, ever holdeth an indifferent temperature, betwixt dryneſſe and moiſture.

CHAP. 18.

How to keepe all manner of Graine, either thraſht or unthraſht with leaſt loſſe the longeſt time, and how to preſerve it from all infirmities and vermine in the houſe or garner.

TO proceed to the keeping and preſerving of Corne and Graine, it is to be underſtood, that it is to be done two ſeverall wayes; that is to ſay, in the eare, and out of the eare: in the ſtacke, when it is joyned with the Straw and Chaffe, or in the Garner, when it is cleanſed and dreſſed. Keeping of corn twofold.

Keeping corn in the ear or in the chaffe.

Touching the keeping of Corn in the Ear or in the Stack, there is no better or safer way then that already described in the 16. Chapter, being free from all offences whatsoever that can come to hurt it.

Now there be others that cut off the eares of their Corn, and then put them into great Chests or Hutches of wood (such are very frequent and much in use in *Ireland*, and other Countries where War rageth) and so keep it sweet and good many years: Others use to beat it out of the Eare, but not separate it from the Chaff, and then laying a leare of the Straw more then a foot thick, to lay a good thick leare of the thresht corn, then another leare of Straw, and so a leare of thresht Corn; and thus lay Leare upon Leare, till you have made up your Stack, in such proportion as you shall think convenient; and this will keep all kind of corn, or Grain, or other Seeds, sound, sweet, and fit for any purpose, at least a dozen yeer, or more, as some have supposed, without either too much drying, withering, moistening, or molding; and sure this is a very excellent way for the storing up of much Corn in a very little roome, and may as well be done with Corne as with Straw: onely it is not to be done in Barne nor House, because Mice, Rats, and other kind of Vermine will work much destruction thereupon, but on a Stack or Hovell made and proportioned in such form as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keep it; sure I am, it will last thus fully twelve yeeres, yet some Authors affirme it will last fifty years, but that is a space of yeares beyond my tryall.

Touching

Touching the keeping of Corn after it is thraſht and dreſt, it is divers ways to be done, as by ſtoage or place of leare, as Garners, Hutches, and ſuch like: by labour and induſtry, as with the ſhovell, or elſe by device or medicine. Keeping of corn out of the Eare or dreſt.

For Garners, they be made divers ways, according to the nature of the Country, and cuſtome of the people. Of Garners.

Some are made with clay and lome troden with hair, ſtraw chopt, and ſuch like: but theſe are the worſt and do ſooneſt corrupt Corn, for although they are warm, which is a great preſervation to Corn, yet they yeeld duſt, and from that duſt is bred fleas, mytes, weavels, and other Vermine which ſpoyl Corne, and make it eaſily rot.

Others are made of ſtone and lyme, but they are ſubject againſt wet weather, to yeeld forth a moyſt dew which corrupteth and rotteth Corn.

Others are made of Brick and Lyme, and they are very good againſt the weavell, and other ſmall vermine, but the lyme is ſharp, and ſo conſequently very unwholeſome for all manner of Grain.

The beſt Garner then that can be made to keep all manner of grain in, is made of plaiſter, burnt & brought into morter, and ſo raiſing it up with the help of ſmall ſtones hidden & placed in the midſt of the wal to make both the inſide and outſide of the Garner of ſmooth plaſter, no ſtone being ſeen, but hidden at leaſt two fingers think on each ſide, and all the bottome alſo muſt be made of plaſter; for no floor keepeth corn ſo well, of what kind ſoever it be, and theſe Garners would bee placed as neere as you can to the backes or ſides of Chimneyes, or as neere the ayre of the fire as you can conveniently, for as there is nothing more cold

then plaſter, yet it is ever ſo dry & free from moiſture, that with no change of the ayr or weather it relenteth, but keepeth the Corne ever in one ſtate of goodneſſe, whilſt the warm ſtanding thereof, is ſuch a comfort in the winter, and the naturall cooleneſſe of the thing ſo ſoveraign in Summer, that the grain ever abideth in one ſtate without alteration.

Of hutches. Now for hutches or great cheſts, byngs, dry-fats, and ſuch like, they are made of old, dry, and well ſeaſoned Oak-boards, plained ſmooth, and cloſe joyned & glewed together, with covers and lids made alſo very cloſe, whereby little or no ayre can come in: ſome of theſe, great byngs, or hutches, made of dry boards, are made open and without covers, but they are not ſo good, for the ayr cooling the upper part of the corn, and the middle part ſweating, breedeth corruption, or muſtines, which hurteth and ſpoyleth the corn: beſides, they are ſomewhat too warm, and thereby make any green corn apt to corrupt and ſmell.

Touching the uſe of Garners and Hutches, they are principally to keep Malt after it is dryed, or Barley which is for the uſe of bread or meale: and here is to be noted, that the beſt manner of keeping malt, is to keep it in the corn, that is to ſay, in the duſt and other filth which commeth with it from the kilne, as thus, when firſt you lay your malt on the kilne to be dryed, you know there is at one end a certain ſprout, or ſmall thred, which growes from the corn, and it is called the come, which by the rubbing and drying of the malt fals away, and leaves the corn clean, and ſnug of it ſelf, and when you trim and dreſſe up your malt for the mill, is winnowed and cleanſed away: this you ſhall preſerve and put altogether into your Garner

or

or hutch, which will ſo mellow and ripen your Malt, that in the ſpending thereof, a peck will go further, then a peck & a halt kept of a contrary faſhion, & although ſome are perſwaded that this come or malt-duſt, is a great breeder of the worm or wevell, by reaſon of the much heat thereof, being indeed of the pureſt of the heart of the corn; yet it is not ſo, unleſſe ſome dankneſſe or moyſture do get to the corn, and then it breeds wevels in infinite abundance, and therefore by all meanes, be ſure that your garners, and hutches do ſtand exceeding dry, and then there is no feare of the loſſe of corn, nor ſhall you need to dreſſe or winnow your Malt but as you ſpend it.

Laſtly, here is to be noted, that although I here joyn garners, hutches, cheſts, and byngs together, yet I make them not all of equal goodneſſe; for the Plaſter garner is abſolutely the beſt of all, the cloſe hutch or cheſt next, and the open byng laſt; yet any, or all, ſufficient enough to keep malt, barley, or ſmall ſeeds, divers years without imperfection.

It is written by ſome of the ancienteſt Authors, that Wheat hath been kept in theſe cloſe hutches or cheſts ſweet, the ſpace of fifty years, yet I hold the rule ſomewhat doubtfull, both becauſe Wheat of it ſelf lying ſo cloſe packt together, is apt to heat and ſweate, and that heate commonly turneth to ſaughtineſſe, and the ſweat to corruption; but that it may thus be preſerved from wormes, wevells, mytes, and other vermine, breeding in corne, it is doubtleſſe and infallible.

Now for the preſervation of wheat, which is the moſt principall graine, of greateſt uſe, and greateſt price, and therewithall moſt tender, and apteſt to take *To preſerve Wheat.*

hurt the experiments are diverſe, as mens fancies, and practiſes have found out, for ſome Husband-men hold opinion, eſpecially the *French* and *Spaniſh*, that if you take the lees of common oyl (ſo it be ſweet) and ſprinkle it upon your wheat as it lies, either in the garner, or upon the floor, that it will preſerve it from all corruption and annoyance whatſoever, nor doth it preſerve wheat only, but all other manner of grain whatſoever; nor doth preſerve corn alone from miſchief, but if corn by caſualty be tainted or hurt, it doth recover it again, and brings it to the firſt ſweetneſs; and if either worms or weavels be bred in it, the oyl preſently kills them, and makes the corn from that miſchief: as for ſmaller ſeeds as hemp, line and rape, this oyl doth not only keep them long and ſound, but alſo feeds and nouriſhes them, and makes them better, either for the ground, or for uſe, either in the mill, or in medicine.

There be others that uſe to take chalk, and beat it to powder, and then ſcatter it amongſt their Wheat, when they put it into the garner, and have found that thereby their grain hath beene wonderfully preſerved from all imperfection, and ſurely there is great reaſon for the ſame becauſe the drineſſe of the chalk drinketh up the moyſture which ſweateth from the grain, and is the firſt breeder of all putrifaction: alſo it cooleth and aſſwageth the immoderate heat which is ingendred in the corn, by reaſon of the pack and cloſe lying together.

Again, there be others which uſe to lay great ſtore of worm-wood among their wheat, which likewiſe preſerveth it from all annoyances, eſpecially from wormes and weavels, as alſo from Mice, Rats, and ſuchdevouring vermine; neither will the Corn corrupt

rupt or grow faughty, as long as the Worm-wood remaines amongſt it: In *Italy* the carefull Husbands uſe to take a certain dry earth or clay, called earth of *Olnithus* or *Cernithus*, and this earth they beat amongſt their Wheat, and then put it into the Garner or Hutch and it will keep it ſound and ſweet divers yeeres together; then when they have occaſion to uſe it, with ſmall reeing ſives to dreſſe it from the Corn, and ſo preſerve the duſt, which will laſt and ſerve you many yeers together, even almoſt an age as ſome have reported, and is at this day to be ſeen in many parts of *Italy*, and other places.

Again, I have for mine own part ſeen in the Iſland of the *Azores*, certain very great and large Caves, or pits made under the earth, of the faſhion of a *Spaniſh* earthen leare, that is to ſay, great and ſpacious in the midſt, and narrow both at the top and bottome, like a braſſe pot, or great glaſſe viall, and made as ſmooth within as may be, and in theſe caves or pits, they firſt lay chaffe, and then their thraſht Wheat, filling it up full to the top, or within a handfull thereof, which they fill again with Chaffe, and then cloſing the top with a broad ſtone, they cover it over with earth ſo cloſe and unperceiveable, that you may walk or travell over it without any ſuſpition; and for mine own part, I have my ſelf digged up many of theſe pits, and found great ſtore of Wheat, both in the High wayes, and other moſt ſuſpicious places; and ſurely it is thought, and experience in thoſe places makes it good, that in theſe Caves or Pits you may keepe Wheat as long if you pleaſe, as *Pliny* ſpeaketh of, which is an hundred, or an hundred and twenty yeares, without hurt or putrifaction either of heate, moyſture, Wormes, Weavels,

or

or any other vermine whatſoever which conſumeth or devoureth Corne; yet how I may recommend this experiment to our nation, I am uncertain, becauſe the much moiſture of our climate, and the cold rawneſſe thereof promiſeth a contrary effect; for the great enemies unto grain, are violent cold and moiſture, and with us it is very difficult to make any caverns under the earth, but they muſt be ſubject unto both: therefore onely to thoſe which live in hot ſandy Countries, high, and free from ſprings or waters, or in dry and rocky grounds, where theſe mynes or hollow places may be hewed out, as in a main and firm quarry, I recommend the tryall of this practiſe, with this aſſurance, that where the ground is fit for that purpoſe, as in any of your ſand grounds or gravelly earths, as in *Norfolke*, *Middleſex*, *Kent*, and many other ſandy climates; or in rockie ſcituations, as in *Nottingham*, *Bathe*, *Briſtol*, and ſuch like, you may keep your wheat, good, ſound, firm, and free from all annoyances, even as long as you ſhall pleaſe to keep it, both without putrifaction in it ſelf, or waſt made by other devouring worms and vermine, but if in a more moiſt place, as in a clay or other mixt earth, which ever is vomiting wet and dewiſh humors, you are forced to approve this experiment: then you muſt neceſſarily lyme all your cave or hollow myne within, at leaſt half a foot thick with tyle ſhred; and plaiſter laid wall-like together, and then the plaiſter dawb'd at leaſt three fingers thick above all, and ſo you may keep your Corn as ſafe and as ſound as any hot ſoil whatſoever, but without it, your Corn will not endure a week without rottenneſs, ſaughtineſs, mouldineſs, and ſtinking.

To conclude, having ſhewed you all the moſt approved

ved & beſt experiments for the keeping & preſerving of wheat, there is none better, or ſo good as this. poor ſilly plain on which I will here deliver: and that is, firſt, as near as you can, reap your wheat at the chāge of the Moon, for wheat which is ſo reaped, is ſelsom or never ſubject to loſſe or putrifaction, (being gotten dry, or in husbandly manner ordered and handled) becauſe that celeſtiall body hath ſuch a power and influence in the growth of Corn and ſeeds, that as ſhe groweth ſo they grow, and as ſhe waneth, ſo they abate and wither.

And truely for my own part, in my poor husbandry, I have made this obſervation, that I have reaped Corn at the beginning of the wane (to mine eye and judgement) great, full, and bold, as the Plow-man calls it, and within few days after, when it came to thraſhing, I have found it moſt poor, hungry, and ſmall corne: nor could I give or find any other reaſon for the ſame, but that it was reaped, in an ill and moſt unſeaſonable time: for one the contrary part, I have ever found that corn reaped upon the change, being ripe, full, and every way fit for the barn (and the weather fair and dry above head) it hath never altered, but kept his firſt and perfect goodneſſe, ſo that I cannot chuſe, but in this caſe think the obſervation of the Moon to be a thing of great effect and validity, appointed by God as a ſecond meanes for our help and profit: when therefore your corn is thus ſeaſonably and well got, you ſhall thraſh it, winow it, and dreſſe it ſo clean as you can; then carry it up into your chambers, or lofts appointed for that purpoſe, and whoſe floores by all meanes I would wiſh to be caſt of the beſt plaſter; for boords too hot, and clay is too apt to breed vermine: On this plaſter floore you ſhall ſpread your Wheat, not a-

bove

above a foot thick at the uppermoſt, and ſo let it lie: obſerving once in four or in five days at the moſt, with a large wooden ſhovell, to turn the Wheat quite over and over. And thus doing, you ſhall be ſure to keep it as ſweet, ſound and good, as when it firſt came into the Barn: for neither can the heat, ſweat nor coldneſſe offend it, the firſt being cooled and tempered by the opening and diſpierſing; the ſecond dried up by the ayre which hath free recourſe into it, and the laſt comforted by the labour and toſſing of the ſhovell, caſting it up and down from one place to another; and though ſome curious husbands may object that this manner of keeping corn, drieth it ſomewhat too much and thereby diſableth it for ſome particular purpoſes, as for *ſeed* and ſuch like; yet in that they are much miſtaken; for this ſtirring and moving of Grain, is not a drying of it, but rather a great comforter and ſtrengthner of it, diſperſing back into the corn, thoſe wholeſome vapours which ſhould do it good (by way of communication and fellowſhip with the Grain) and expelling thoſe ill humours which ſweating out of it would otherwiſe confound and hurt it, ſo that in concluſion for the true and long keeping of Wheat ſweet, ſound, and perfit, without loſſe or corruption, there is no way more ſafe or eaſie, then this laſt expreſſed, being of all other the beſt, although in ſhew it appear ſleight and triviall, as for the moſt part things of greateſt moment in this nature do; but to the judicious Husbandman I referre it, whoſe aym is at the worth and ſubſtance, not at the words and curious gloſſe, ſet forth in ſtrange ingrediens.

To preſerve Rye.

Touching the keeping of Rye or Maſline, or as ſome call it munck-corn, or blend-corn, being part Rye, and part

part Wheat mixed together, that which preſerveth Wheat will alſo preſerve it, for they are Grain of like nature, onely the Rye is ſomewhat hotter and dryer, and therfore will endure ſomwhat more moiſture; yet to ſpeak particularly touching the preſervation of *Rye*, there is nothing better then the Plaiſter floore, and oft turning; the cloſe Hutch is alſo exceeding good, ſo is the Pipe or Dryfat, but being once opened, and the ayr entring into the Corn, except it be ſoon ſpent, it will ſoon putrifie, for though in the cloſe keeping, it laſt long, yet when it comes to the ayr it will quickly receive taint. Laſtly, for the profit in keeping of Rye, indeed there is nothing better then to ply it and tread it hard into hard veſſels or barrels, wherein ſalt hath been much lodged, or other brine or ſalt matter; provided alwayes that the veſſels be ſweet and untainted, no ways ſubject to faughtineſſe, or other unſavourie ſmels, from which there is no preſervation.

To preſerve Beanes.

Concerning the preſervation and keeping of Beanes, which are indeed a more groſſe and fatter Graine then any heretofore written of, and out of the fulneſſe of their ſubſtance, more ſubject to moiſture and thoſe dankiſh humors which corrupt corn: the carefull husbandman obſerveth two rules; firſt, not to thraſh any Beanes or Pulſe, more then for neceſſary uſe (as for the Stable or Mill) before it be midde *March*, at which time the Graine having taken a kindly ſweat in the Mow, Stacke, or Hovell, is become ſo dry, firme, and ſolid, that no floore, wall, or other place of Leare can make it relent or give againe (except great abuſe and too moiſt keeping) for it is to be underſtood, that this ſort of Pulſe or Grain, is of it ſelf ſo exceeding moyſt and apt to ſweat in the Mow, that all Husband-

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men endeavour by no means to houſe it, or lay it within doores, but ſeek to make it up in ſtackes and hovels without doores, not ſo much that houſe roome is wanting, as that the benefit of the Sunne, and Ayre, which pierceth through the ſame, dryeth and ripeneth the corne in ſuch kindly manner, as maketh it as ſerviceable as any other: and indeed, the firſt invention of ſtackes, hovels, reekes, and ſuch like, did not ſpring ſo much from the want of houſing, as from the good and profit which the Husbandman found to acrue to this kind of Graine only by reaſon of laying it abroad, for it is certaine, that Beanes and Peaſe neither grow together, nor ripen together, but put forth their increaſe one after another; for you ſhall ſee upon one ſtalke, bloomes, ſwads, and ripe cods: ſo likewiſe in the gathering of Pulſe (when it is reaped from the ground) you ſhall ſee ſome dry and withered, ſome ripe, ſome halfe ripe, ſome abſolutely greene, and as but new in growing.

Now all theſe muſt be reapt together, and if you ſtay them in the field till all be of like drineſſe, queſtionleſſe the oldeſt will ſhake and ſhed upon the ground before the youngeſt be ripened; and what that loſſe will redound to, every Husbandman can judg: ſo alſo to houſe and mow up in cloſe mow, the dry pulſe with the green, ſurely the green cannot chuſe but inflame, and heate the dry, and the dry ſo heated to give fire to the green, till both be either rotted or conſumed: and hence it came, that expert Husbandmen deviſed to lay their pulſe for the moſt part, ever without doors, in ſtacks, reekes, and hovels, that the Sun and wind paſſing thorow them, might bring all the graine to an equall dryneſſe and hardneſſe.

Again,

Again, Pulse being of all grain the courſeſt and fulleſt of ſubſtance in it ſelf; and the ſtraw ever big and ſubſtantiall, and full of broad thick leaves, ever moiſt and ſappy; it muſt needs follow that this grain muſt ever be moſt apt to ſweat in the mow, & ſo neceſſarily craveth the greateſt ſtore of aire, and the longeſt time in drying, ſo that to return to my firſt purpoſe, it muſt needs follow, that no beanes or peaſe can be ripe or ſeaſoned in the mow, till it be mid *March* at leaſt; for it is an old ſaying, among the beſt husbands, *That a march wind is ſalt which ſeaſoneth all Pulſe*: and if uſe or neceſſity compel men to thraſh their pulſe before that time the grain is ſo imperfect, that it muſt be kiln-dried, or elſe it is fit nei her for the uſe of bread nor provender.

Now herein is to be underſtood, that peaſe or beans which are kiln dried, may be kept ſound, ſweet, and good either on plaſter floores, boarded floores, or earthy floors, the ſpace of many years, without turning, or toſſing; nor neede you to reſpect how thicke the heap lye, ſince beans after they are once dryed on the kiln, or in the Sunne, never after will thaw, give again, or relent, but remaine in their firſt ſoundneſſe: But if you preſerve your Beanes for other uſes, as to boyl in your pot, and feed your ſervants withall, as is uſed in *Somerſet-ſhire*, and many other Weſterly parts of this Kingdom, then it ſhall be good for you to take oyle barrels, oyle caſk that is ſweet, and firſt Caſke them all over within and without with aſhes, and then put your beanes therein, and cloſe up the heads, and as it is affirmed by divers great Authors of Husbandry, it will keep Beanes ſound, ſweet and good, twenty yeares: nay, ſome give inſtances of Beanes which have beene thus kept and preſerved the ſpace of

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one hundred and twenty yeares; and ſurely I am perſwaded that if Beanes be well and dry got, and threſht at a ſeaſonable time of the year, as in March or April, that thus kept, they will laſt the uttermoſt of a mans pleaſure.

Preſerving of peaſe or fetches.

Now for the keeping or preſerving of Peaſe or Fetches, which of all other Grain whatſoever, is moſt ſubject to rottenneſſe and imperfection, becauſe out of its own nature is apt to breed wormes, weavils, and mytes, by reaſon of the much luſhious and ſweetneſſe of the kernell of the Graine; you ſhall in all things obſerve the ſame courſes that you do with your Beanes, both touching your gathering, drying, ſtacking, and alſo thraſhing, for as they are moſt adreſt to go together being neer of nature and condition one to the other, ſo it is fit that you do apply unto them one and the ſelf medicine or remedy.

And herein is to be noted, that as Peaſe, are of more generall uſe then beanes as for horſe provender, feeding of Swine Pigeons, Pullen and ſuch like; as alſo for bread, pottage, to boyle, with, or without meat, for certainly it is a moſt wholeſome and ſtrong food, as may be ſeen by the people of *Devonſhire*, *Cornwall*, and *Somerſet-ſhire*, to whoſe great ſtrength of body not any reaſon can be given more probably then their much feeding on this Grain, and their acquaintance with much and ſtrong labour, ſo they ought with more care and circumſpection to be preſerved from all thoſe anoyances that naturally are apt to hurt them, as wormes, rottenneſſe, mould, muſtineſſe, and ſuch like.

And firſt, there is nothing better for the long and well keeping of Peaſe, and the very well drying of them

them, either in the Sun, or on the Kiln, eſpecially thoſe which you uſe for bread, provender, or feeding of Swine: and although ſome husbands uſe to feed ſwine with undryed Peaſe, nay many times both undryed and undreſt, that is to ſay, the Pulſe or Chaffe not taken away, and are of opinion that the Grain ſo given, ſooner feedeth and puffeth up Swine then the other, yet they are deceived; for albeit it ſwell and puff up a beaſt, yet is the fleſh and fat neither ſo good, ſound, and long laſting, as that which is gotten with dry food, nor doth it make a Swine ſo thirſty, and the Husbandman is ever aſſured, that when his Swine drinkes not well, hee feeds not well: therefore what Peaſe you keep for bread, or feeding of Cattell, by all means dry them well, and lay them either in Garners or Floores, and they will laſt ſound and good without breeding worms or wevels, as long time as you pleaſe. But thoſe which you keep for food at your own table, as in pottage, or other uſes, which muſt by no meanes be too much dryed, becauſe then they ask a double time in boyling, and ſpend a double quantity of fewell in their preparing.

Some uſe after they be clean thraſht and dreſt, to lay them in a cool cloſe Garner either of Plaſter, Earth, or Boords, of which Plaſter is the beſt; as for any thing that relenteth or yeeldeth moyſture, as lyme, ſtonewals, or ſuch like, it is moſt hurtfull, and immediatly maketh peaſe mould and rot: alſo it is good to lay your peaſe in thick heapes in your Garner, for that will preſerve them moyſt the longer time, but to ſpread them thin upon the floor, by which means the Sun, Ayr, and wind may paſſe thorow them, is not ſo good, for it dryeth them too ſore, and taketh from them much of their ſweetneſſe and goodneſſe, which ought moſt careſully

to be preſerved. There be other swhich preſerve theſe tender meat Peaſe by thraſhing them up, and then letting them lie in their own pulſe or chaffe, and not dreſſing them, but as they have occaſion to uſe them, and queſtionleſſe this is a very good and laudable way, for the pulſe and chaffe, doth maintain them ſweet and moiſt, and yet keepeth them withall ſo warm and comfortable, that they laſt much longer, then any other way whatſoever, and in this manner of preſerving peaſe is to be noted, that by all meanes you muſt let them lye upon a dry earth floore, ſo long as they are in the chaffe, rather then on the boord, or on plaiſter, and yet in this caſe the boords are better then plaiſter.

Laſtly, and which indeed, is the beſt experiment of all other if you intend to keep peaſe any extraordinary long time, you ſhall take Barrells or dry Cask, wel and ſtrongly bound, and pitch them within exceeding well, with the beſt pitch or bitumen that you can get, and then ſprinkle the pitch all over with ſtrong vinegar, then take your peaſe, being clean and well dreſt, and put them into the barrells, preſſing them down cloſe and hard, then head up the barrels, and let them ſtand dry and cool, and they will preſerve your peaſe ſound, ſweet, and good for any uſe whatſoever as long as you pleaſe, be it for ten, twenty, or thirty years, according to the opinions of ancient Husbandmen, and other provant Maſters; that have lived and commanded in towns beſieged, and towns of garriſon; neither ſhall any worm, mite, or wevell, ever breed in it, or offend it, nay if any have in former time been bred in them, this manner of keeping the grain, killeth them, and deſtroyeth them for ever.

Now

Preſerving of lentils or lupins.

Now there is another ſort of Pulſe which are called Lentils or Lupins, which albeit they are not ſo generally uſed for the food and ſuſtenance of man, yet they are for horſe, ſwine, and other cattell as much in requeſt as any Graine whatſoever, and indeed doe feed fatter, and ſooner then other ordinary Pulſe, and the fleſh ſo fed is ſweeter and pleaſanter both to the eye and to the taſte, then that which is fed with Beanes or peaſe; alſo they are a pulſe very phiſicall and good for many medicines, as may appeare by the workes of many learned Phiſitions; and theſe the longer they are kept, the better they are, and fuller of profit. To preſerve them then in good and ſound eſtate, it is meete to reape them in very faire weather, and to Stacke them up exceeding dry, and if they be laid in the barne, or any cloſe houſe, it is not amiſſe, for they will endure houſing better then any other pulſe, yet the ſooner you beat them out of the ſtraw, or thraſh them up, the better it is, for Husbandmen ſuppoſe there is no greater hurt to this hand of Graine, then the long keeping it in the ſtraw; for it is of ſuch rankneſſe, that the very ſtraw, and cods breed in it much putrifaction; and I my ſelf obſerved both in Spaine, and in the Neighbour Iſlands, where is great abundance of this kind of Graine, that they doe no ſooner gather it and bring it home, but immediately they thraſh it; nay, ſome thraſh it in the fields upon the lands where it growes, and ſo bring it home, then ſpread it on fair boorded floores in very great heapes, or elſe lay it up in cloſe hutches, or bings, ſuch as Wheat and other white grain is to be kept in. If you dry this kind of pulſe in the Sun, or upon a kiln, with a very moderate & ſoft fire, & then lay it

up either in cloſe Garner, or cloſe Hutch, it will laſt many yeers ſound, good, and without corruption; there be other Husband-men which mixe with this Graine when it is thraſht, a half part of hot, dry, white ſand, or at leaſt cover the whole heape of Pulſe with the ſand, and doe finde that it keepes the Grain very ſound and good many years together. But to conclude, if you take ſtrong vinegar, and a good quantity of *Lacerpitium*, and diſſolve and mix them very well together, and then having laid your lentils or lupins together on a fair boorded floor, in large, broad, and flat heapes, about two foot, or two foot and a half thick, with the *Vinegar* and *Lacerpitium* ſprinkle over all the heape, and not any change of weather, froſts, wormes, or other vermine ſhall do them hurt, but they ſhall remain ſound and good as many years as you pleaſe to keep them. There are other Husband-men that in ſtead of this before rehearſed, take only ſweet oyl, and ſprinkle it all over the Grain, and find the ſame vertue and effect, for neither wormes nor other vermine will touch it, nor will the radicall humour thereof at any time waſte or decay, but remain ſtrong, full and ſound, without any kind of diminiſhing, nor ſhall you find any abatement of it, or ſhrinking in the meaſure, but that which was a buſhell this year will be alſo a buſhell the next yeare, and as many yeares after as you pleaſe, which is no ſmall profit to the owner.

Whereas on the contrary part, if the Grain be either dryed in the Sun, on the Kiln, or by the wind, you ſhall hardly have of every ſuch buſhell ſo dryed, three pecks and a half againe, which is by computation at every quarter, which is eight buſhels, full one buſhell loſt, and yet this Pulſe thus preſerved, as before ſaid, ſhall be

be as good for any use whatsoever fit for such Corn to be employed in, as any other dryed Grain whatsoever, and yeeld as much every way, and altogether as good meal, and as good meat.

preserving of oates.

Now touching the preserving and keeping of Oates, it is to be understood that of all Grain it is least casual, because of it self naturally it breedeth no evill vermin, and is again preserved and defended with a double husk whereby neither cold, moysture, heat, nor dryenesse, is able so soone to pierce and hurt it as other Graines, which are more thin clad and tender; yet because it is of great and necessary use both for cattell and pullen, and that neither the Husband nor Housewife can well keep house without it, you shall know, that the best way to preserve it longest, is, after it is thrasht to dry it well, either in the Sun or on the Kiln, and then either put it into close Garner or close Cask, and it will keep many years sound and sweet.

preserving of oatmeal.

Touching the preserving of Oat-meal, which is the the inner Kirnell of the Oates, and a Graine of most speciall use in the Husband-mans house, as in his pottage, in his puddings, and in many other meats necessarily used for the labouring man; It is an experiment not altogether so curious as any of the rest formerly written of, for no Oat meal can be made, but the Oats must be exceedingly well Kiln dryed, or else the Kirnell will not part from the Hull, and being dryed, as is fit, that drying is sufficient to keep and preserve the Oatemeal divers years.

Provided ever, that presently after the making of your Oatmeal, you put it into dry close Caske, or dry close Garner (but Caske is the better) and so as it may re-

remain exceeding dry (for any thaw or moyſture corrupts it) and as neere as you can let it have (if it be poſſible) ſome ayre of the fire, for the warmer it ſtands, the better and longer it will laſt, as experience ſheweth.

preſerving of any meal. For the preſerving or long keeping of any ſort of Meale, there is no better way then firſt to boult and ſearſe him from his bran, for the bran is very apt to corrode and putrifie the Meale, and to bring it to a faughtineſſe or muſtineſſe, then into every ſweet and clean dry Caske cloſe and well bound, tread in your Meale ſo hard as you can poſſible tread it, and then head it up cloſe, and ſo you may keep it either by land or water ſo long as you pleaſe, and when you have any occaſion to ſpend of it, be ſure to looſen no more of the meale then you preſently uſe, for the faſter and cloſer the meale lyeth together, the longer and ſweeter it will laſt, for it is the gathering in of the ayr that only corrupts it.

And here is alſo to be noted, that you ſhould not preſently as ſoone as your Meal is ground, boult from the Bran, but rather let it lie a week or fortnight in the Bran, in ſome cloſe Bing or Trough, and then after that time boult or ſearſe it, and you ſhall finde it to afford you in every buſhell, more meal by at leaſt half a peck then if you ſhould preſently as ſoon as it comes from the Mill; whence it proceeds, that the cunning and skilfull Baker will ever have a week or fortnights proviſion of meale before hand, which lying ſo long in the Branne, payes double intereſt for the continuance.

Now if it fall out ſo, that either by trade of Merchandiſe, or other occaſions, you buy any meal by way of

of tranſportation which is caskt up (as much meale is ſold by the Barrel) you ſhall then preſently as ſoon as you have bought it (if it be for your own uſe for expence) break open the heads, and empty the meal upon fair ſheets on a clean floor, and then ſpreading it abroad let the Sun and Ayr paſſe thorow it, which will dry up the ſweat, and if there be any taint of faughtineſſe, take it away, and bring the meale to his firſt ſweetneſs, and then immediatly boult out the courſe Bran, and after, as was before declared, tread it hard into freſh and ſweet cask: and thus you may keep your proviſion of meal all the yeer long; nay, if need require two or three yeers, for after the firſt ſweat is taken away and kindly dryed, there is no doubt to be made of any that ſhall follow after.

preſerving of all ſmal ſeeds

Laſtly, touching the preſerving and keeping of all manner of ſmall ſeeds of what nature or quality ſoever they be, whether Hempe, Line, Rape, Muſtard Seed, or any other Garden Seed whatſoever, though truly and properly they laſt never above one yeere, nor are fit for Seed or Increaſe after that date expired; yet in as much as they are medicinable after, and a much longer time, therefore you ſhall underſtand that the beſt way to keep them ſafe and ſound, and the fitteſt for uſe and profit, is firſt to gather them as ſoon as you perceive them to be ripe, and the weather being bright, clear and dry, then you ſhall dry or wither them in the ſhade, and not in the Sunne, eſpecially upon a plaſterd floor, where the light looketh to the South, and be ſure that as little Sun and moyſture come to them as you can, for both are main enemies; which done, bind them up in bundles without thraſhing, and ſo hang them up, and keepe them in their owne cods, and

they will last for all uses, a full year, and for some particular uses two or three years; and in this manner you may also preserve all manner of hearbs, weeds, flowers, rootes, and the barkes or rindes of all manner of trees.

CHAP. 19.

How to keep Grain, either for transportation by Sea, or for use in a Town of War or Garrison, from one year to one hundred and twenty.

The use of grain & pulse at Sea.

TO speake of the Graines and Pulses which are meetest for the Sea, and their severall uses.

It is to be understood, that the best and principallest Grain which is indeed both most sweet, most fresh, most pleasant in taste, and most long lasting, is Rice, which although it grow not much in our Kingdom, but that we are beholden to our good Neighbours for the trade thereof, yet it is in such plenty where we fetch it, that we need neither complaine of the scarcity nor the cost, and so much the rather in that a pecke thereof will goe further then a bushell of any other Grain: Of this Rice is made many good and wholesome dishes, some thick, some thinne, some baked, some boyled, as thus: If you take a quarter of a pound of Rice, and boyle it in a pottle of Water, till it come unto an indifferent thickness, and then put into it a good lump of potted or barrelled butter, and as much sugar as shall salt-wise season it to an indifferent sweetnesse, it is a dish of meat, meet for an Emperor at Sea, wholesome, good, and light of disgesture, and will be as much as foure reasonable men can well eate at a meal,

Of Rice and the use.

meal; for the nature of the Rice is such that it wil swel in boyling, and grow to that bigneſſe, that in an inſtant it will thicken a pottle; ſome uſe the night before they boyl it, to ſteep it in ſo much water, as will onely cover the Rice all over, and then the next day boyl it in a pottle of water more, and the Rice ſo ſteeped will ſo ſwell, that all the firſt water will be drunk up, and a great deal of leſſe boyling will ſerve to make it ready, and ſure then this a man cannot find a cheaper way to feed men, ſince one pint of water, and the fourth part of a quarter of a pound of Rice (which comes not to above a half penny at the deereſt reckoning) is a meale ſufficient for a mans eating, having Bisket and Drink proportionably. And this Diſh of meat being thus thin boyled, is called at Sea Lob-lolly, and after ſalt feeding is wondrous wholeſome and comfortable to any man, whether he be ſick, ſound or diſeaſed, and both abateth infirmities, and haſteneth the healing of all wounds.

There be others, that after they have ſteeped this Rice (as aforeſaid) dothen boyl it in like manner, till it be ſo thick that a ſpoon may ſtand upright in it, and no liquidneſſe of the water perceived; then put a good lump of butter into it, and boyl it with it, and ſtirre it about, and it will make it come moſt clean out of the potin which it is boyled; then ſeaſon it with Sugar, and a little Cynamon, and it will be a diſh of meat right good and delicate, and meet for any man of what quality ſoever, that is worth goodneſſe or preſerving, nor need the quantity exceed the proportion already prescribed.

Again, if you have meal in the ſhip, if you take of this Rice ſteeped in water, anda little lightly boyled and ſeaſoned with Sugar, Cinamon, and Ginger, and a good

good quantity of Butter, and then bake it in little paſties, you ſhall find it a moſt delicate, pleaſant, and wholeſome meate, and that a penny in it ſhall go further and give better contentment then four peniworth of Beefe, Bacon, Fiſh, or any other hard ſalt Meat; yet I doe not wiſh any man of ſhip-board to make this a continuall feeding diſh, for it is both too pleaſant and too ſtrong, and where evacuation of ſome humours are wanting, may breed inconvenience in ſtrong Bodies; but rather to uſe it once a week as a phyſicall nouriſher, or for the comfort of ſicke and diſeaſed men, whoſe ſtomackes are tane away, or elſe weakened; there may be alſo made of this Rice in time of neceſſity (being ground to a fine meale) an excellent good Bread or Ruske, which is pleaſanter, ſweeter, and much longer laſting then any made Wheat, or any other Grain whatſoever, beſides many other Seedes which would in this place ſhew but too much curioſity to repeat.

Wheat, and the uſe, The next Grain unto Rice which is of eſtimation and great ſervice at the Sea, is Wheate, of which although there be divers kindes, yet they are all alike for the ſerving of this purpoſe; onely the large and thick huld Wheat (being well dryed) will laſt the longeſt, but the ſmaller and fine skind wheat yeelds the puret flower, and makes the better meate. Now of this Wheat is to be made divers diſhes of meate, for ſome do take it, and bruiſe or beat it in a Bag, till the upper skin be beaten off, and then having dreſt and winnowed it, boyle it in cleane Water till it burſt, and grow as thick as pap; then take it from the fire, and being hot, put into ſeveral diſhes of Mood, or traies, ſo much in every diſh or tray as may ſerve four men, and ſo let it cool,

cool, then give it to the ſick or ſound, as you ſhall be directed, and it is an excellent wholeſome good meate, either cold or elſe hot, and a little butter melted with it, or being again boild in freſh water, and ſeaſoned with Salt and a little Sugar, it makes an excellent Grewel, or lob-lolly, which is very ſoveraign at ſea, alſo your parched Wheat is a very good food at Sea, and of much requeſt and eſtimation, being ſprinkled with a litle ſalt, and of this food a little will ſerve a man at a time, by reaſon that the much ſweetneſſe thereof ſoon filleth and cloyeth the ſtomack, yet it is wondrous light of digeſtion, and breeds great ſtrength, and much good bloud, as we daily find by experience.

Of Oatmeale and the uſe.

The next Grain unto this which is to be recommended to the Sea (and which is indeed not any thing inferiour to either of the other going before, both for ſtrength and laſting) is Oatmeale, which by reaſon of the great dayneſſe, and drying thereof, feeles little or no imperfection at the Sea, as being unapt to ſucke or draw in any of the ill or moyſt vapors thereof. Of this Oatmeale is made many good, freſh, and comfortable meates at Sea, as Grewell, or Lob-lolly, by boyling it in freſh water, and ſeaſoning it with Salt, and (if you have it continually) ſometimes with Sugar and a few Currants, and a little Mace, which is meate of great ſtrength and goodneſſe, eſpecially for ſuch as are ſick and weak; for it is a great reſtorer of nature, and a purger of the bloud; alſo to ſteep the whole Grots of Oat-meale a night in water, and then drayning them, and putting it into a Bag, boyle it till the Grots break; then putting it out of the bag, butter it with butter, and it is an excellent food; alſo boyling Oatemeal in freſh Water with Barme, or Dregges, and hinder ends of

your

your *Beer-barrels*, makes an excellent good *pottage*, and is of great use in all the parts of the West country, especially, where *Marriners* or *Sea-men* live, and are called by the name of *Drousson pottage*. Also, of *Oate-meale* is made that meate which is called in the West, *Washbrew*, and may be made at the Sea at your pleasure, being a meat of that great account amongst *Devonshire* and *Cornish* men that they will allow it no paralell; and for mine own part I have heard a most famous and and well learned *Physitian* in those parts allow it to be a meat of singular great strength and goodnesse, and withal so light of digestion, that a man can very hardly surfeit upon it at any time; and I am the rather induced to believe the same, because I have observed and seen many of the labouring men of that Country to eate such an unmeasurable quantity thereof, that in mine eye one mans Supper would have served a whole Family.

But you will say, *Hunger* and *Labour* are such excellent Sawces, that they digest any thing.

To that I answer, that I have seen Gentlemen and Gentlewomen of that Country, of whom as much curiosity hath attended, as is liable to the City, nay such as have had sickneſſe their best familiar, yet eate of this with great and sharpe appetite, and when health was most to be feared, then to boast of most soundnesse. This *Washbrew* is to looke upon like *Painters Cize*, or new made *Jelly*, being nothing but the very heart of the Oate-meale, boyled and drayned to that height and thickneſſe, having neither Hull nor Bran in it, but the pure Meale and Water, and it is to be eaten either with wine, strong bear, or ale, or with clarified honey, according to mens stomackes or abilities.

Now

Now this the eaters thereof affirme, that by no meane s it muſt be chawed, but rather ſwallowed by the ſpoonfull whole, becauſe chawing like a pill makes it taſte unpleaſantly. There is again another meat to be made of Oat-meal, which is called Girt-brew, and is ſomewhat more courſe, and leſſe pleaſant then Waſh-brew, having both the branne and huls in it, yet is accounted a food of a very good ſtrength, and exceeding wholeſome for mans body, and of my knowledge much uſed and much deſired of all labouring perſons that are acquainted with it: Many other foods there are to bee made of Oat-meal, but theſe ſhall be at this time fully ſufficient.

Of Barley and the uſe.

The next Graine to this I account Barley, which may be every way uſed like unto wheat, either to make grewell, to be creyed, parcht, or boyled: and for Barley for this purpoſe of food, the beſt is *French* Barley, the next is Barley big, or Bear-Barley, and the worſt are the ſpice or battledore Barley, and our common *Engliſh* Barley.

Buck, and the uſe.

And as Barley or Wheat, ſo may you uſe your Bucke, and your *Indian Silligo*, for they are of like nature, onely aske a longer time in their beating, ſteeping, and boyling, becauſe they are naturally more hard and more dry, by reaſon of the heate of the Climate in which the beſt grow; and is ever to be obſerved for a rule, that the dryer you keepe your Corne at Sea, the better it is, the ſweeter and longer laſting.

Of pulſe, and firſt of beans, the uſe.

Now having ſhewed the uſe of theſe lighter grains, I will come to Pulſe, and ſhew their uſe and benefit at the Sea, or in beſieged Towns: and of Pulſe, I will firſt ſpeak of Beanes as a principall food, wholeſome and

and ſtrong, and though not ſo fine and light of digeſtion as any of the former, yet exceeding hearty and ſound & a great breeder of good blood; they are for the moſt part to be boyled whole, till ſuch time as they appear ſoft and tender, or begin to break, and then drained from the water, are ſerved in trayes, and well ſalted, and ſo eaten; a pottle whereof is thought a full proportion for four men: and of theſe beanes there are divers kind as the common Garden Beane, or the French bean, which is great, broad, and flat, and theſe are the beſt to boyle, either with meat, or by themſelves, and ask the leaſt labour, becauſe their outer skinne is moſt tender, and the inward ſubſtance moſt apt to be molified and ſoftned: they may alſo bee boyled both when they are young and green, and when they are old and dry, and the meat at both times is good and ſavory.

The French bean.

The next beane to theſe are the Kidney beane, which is flatter, and leſſer, and neerer the proportion of a kidney then the French bean is, and this is alſo a garden beane, and whileſt it is young and green is to be eaten Salet wiſe after they are boyled, both the cod and bean together, and it is certain, a better ſallet cannot be taſted; for the cod or huſk is every way as excellent in taſte as the bean is; but after they grow old and dry, and that the moyſture is gone out of the cod, then it is meete to thraſh them, and then boyl them like the French beane, and they are every way as good meat, and as ſoon boyled and as tender.

The Kidney bean.

The next bean to theſe are your common and ordinary field beanes, which having tough and hard skinnes ask more boyling then the other beanes, and are ſomewhat harder in taſte, yet a good ſound food alſo: there

Common field beans, the uſe.

there be many that parch them in the fire, and think them then the beſt meat; becauſe the fire ſooner breaks the skin and ſoftneth the kirnell; but they cannot be done ſo abundantly and therefore are not ſo much in uſe.

After this great ſort of Pulſe, I will now ſpeak of the ſmaller ſort, as peaſe and their like; and of peaſe there be two kinds, the Garden peaſe, and the Field peaſe, and for this uſe (albeit both are very good) yet the Garden peaſe are beſt, for they are ſooneſt boyled and are moſt tender, and ſerve for moſt uſe, as for pottage, boyling, perching or ſpelting; and of theſe garden peaſe, there are divers kinds; as white peaſe, French peaſe, haſtings, rounſivalls, and ſuch like; the firſt being the longeſt laſters, the ſecond the pleaſanteſt in taſte, the third the earlieſt and tendereſt, and the laſt largeſt and fulleſt. Of peaſe and the uſe.

The Field peaſe are onely of two kinds, as the white peaſe, and the gray peaſe, and they ſeldome make pottage, becauſe they are unapt to break, but are onely for boyling and making of leap Peaſe, or for parching, yet a good and a ſtrong food: and as we uſe peaſe, ſo in other Countries they uſe lupins, lentills, tares, fetches, and ſuch like ſmaller pulſe, but they are neither ſo good, wholeſome, nor ſavourie in taſte, being a kind of grain more rank, fulſome, and breeding of ill blood and infection within, theſe in caſes of Sea-fare and Warre-fare, ought principally to be eſchewed and ſhunned. Severall ſorts of Garden peaſe.

Now it reſteth after this long digreſſion of theſe ſeveral graines, and their uſes, with the meates and profits which are made for them, that we come to the ſafe manner of keeping and preſerving them either by land or water, for victuall or tranſportation, ſo as they

they may laſt and endure without ill ſmell or rottenneſs.

To tranſport Grain.

And firſt for tranſportation of graine by Sea, it is two ways to be done, as either in great quantityes for trade and the victualling of other nations, or in ſmaller quantity for victualling the men in the ſhip, prepared for a long and tedious voyage.

Tranſporting Grain for trade.

For the tranſporting of Graine for Trade in great quantityes, it is to be intended the voyage is ſeldome long, but from neighbour to neighbour, and therefore commonly they make cloſe deckes in the ſhips to receive the Grain fair and even boorded, yet if ſuch decks be matted and lined, both under, and on each ſide, it is much the better, and this matting would be ſtrong and thin; there be ſome which make the deckes onely of mats, and ſure it is ſweet, but not ſo ſtrong as the boord: therefore the beſt way of tranſportation, is to have ſtrong boorded deckes well matted; and then ſpreading the corne of a reaſonable thickneſſe, to cover it with matting again, and then to lay corn on it again, and then mats again, that between every reaſonable thickneſſe of Grain a mat may lye, the profit whereof is, that when the Corn with his own heat, and the working of the Sea ſhall begin to ſweat, which ſweat, for want of ayre to dry it up, would turn to putrifaction.

Then theſe mats thus lying betweene, will not onely exhale and ſuck up the ſweat, but alſo keepe the Corne ſo coole and dry, that no imperfection ſhall come unto it: And here is to be noted, That theſe mats ſhould rather be made of dry white bents, then of flags and bulruſh, for the bent is a firme, dry criſpe thing, and will not relent or ſweat of it ſelfe, but the flag or bulruſh is a ſpungy and ſoft ſubſtance which

never empty of his owne and other moystures.

Now for transporting of graine, for Victualls for the ship, which is in much smaller quantity, because it is but for the private use of a few within the ship; the only best and safest way, is, to take Salt-fish barrels, or any Caske in which any Salt-fish hath beene piled, as Cod, Herrings, Salmon, Sprats, or any other powdred Fish; and whilest the vessels are sweet, you shall calke them both within and without plaister, daubing them all over; then into them put your Graine of what kind soever it be, and head them up close, and then stow them in such convenient dry place of the ship, as you shall think fit, and questionlesse, if beliefe may be given to the worthiest authors which have writ in this kinde, you may thus keepe your Graine sweet, sound, and in full perfection from one yeere to an hundred and twenty yeers; but certainly daily experience shews us, that all kinde of Grain thus put up & kept, wil remaine sound & sweet; three, foure, and as some say, seven yeeres, for so far hath lately beene try'd: and what here I speake of ship-boord, the like may be done in any town of war or garrison, whether besieged, or not besieged, or in any other place, where any necessity shall compell; the proof of this manner of piling or putting up of Graine, serveth as well for Land as Sea.

Transporting of victuals.

CHAP. 20.

The inriching of all manner of barren Grounds, and to make it fruitfull to beare Hops.

THe Hop of all plants is the most tender, and can endure neither too rich a ground, nor yet too poore, for being planted in the first, it bringeth forth onely leaves and no bels, and in the latter yeeldeth neither leaves nor bels.

Abating fertility.

Now in the first sort of ground, which is fertile and rich, I have nothing to doe but onely to advise how you may alay and lessen that too much fatnesse, by mixing your hills well with Chalke, or small sharpe gravell; if it be a hassell or mix'd mould, and with good store of red sand if it be a stiffe clay, for either of these mixtures will in short space abate any fert ility.

Increasing of fertility.

But if the soule be contrary to this, that is, extreme barren, then you shall seeke by these meanes following to encrease the fertility: First, when you have taken view of that barren earth, which you intend to convert to a Hop-garden, you shall first looke to the situation thereof, whether it lie high or low, whether it be subject to inundations or drownings, or that it lie safe and free from any such annoyance: If it be subject to great and deep overflowes, then it is no ground for this purpose; but if it be onely liable but to some small washings, then you may buy a few small draines and sewers cast thorow your allies, convey away the water to some lower grounds, so as it may not continue long in the Gardens to do hurt. Besides for a further safety to the Hop, you shall make your hills a great deale bigger and higher, that when any overflow shall happen, the water may not reach above the mid part of the hill at the most, for the root may endure moystning, but not drowning, and this water thus running through the allies, and not drowning: the root will bring to the ground very much fertility. But, how soever after you have eas'd your ground of these particular faults, yet the generall fault which is barrennesse, will remaine still: therefore, having plotted out your Garden, and fenced

Choice of Earth.

Draining water.

eed it ſufficiently about, you ſhall then caſt up your hills about *Michaelmas*, placing them in a very orderly manner, and making allies betweene them of foure or five foot bredth betweene hill and hill, ſo as a man may walke at pleaſure through and about them, neither ſhall theſe hills ſtand all directly behind another, for ſo one will over ſhade another, which is an annoyance, but according to this Figure, where there is a large-neſſe of ſpace, and a by-paſſage, through which the Sunne may come to give comfort to every Plant.

Caſting of hills and alleies.

o o o o
o o o
o o o o

Theſe hills, if the ground be free from water, may be raiſed about two foot, or a foot and a halfe high, and of a compaſſe anſwerable to the height; neither ſo little, that the hill may be ſharpe like a Sugar loafe, nor yet ſo bigge, that the hill may lie flat, and ſo retaine and hold any raine or wet, which ſhall fall upon it; but you ſhall keepe a due middle proportion, making the hill convenient for your Plants and Poales, and ſo as it may ſhoote or put off any wet, or other annoyance, which ſhall fall upon it.

Now theſe hills you ſhall not make entirely, all of the one mould, but you ſhall take, as it were, a third part or better thereof, then another part of the earth which lieth under dung-hills, and the laſt part of the Sope-aſhes, and theſe three bodies you ſhall mixe equally together, and of them compound your Hop-hills. But if this ſeeme ſomewhat too difficult, and that you cannot find enough for your purpoſe of either of theſe meaſures; then you may take three parts of the naturall earth, and but onely a fourth part of the other two, and therof mixe your Hop-hills,

The compoſition of the enriching of hills

and it will be ſufficient to afford you profit enough, provided you be able once in three or foure yeeres to renew it, for ſo long this will laſt in full ſtrength and power.

When you have thus made up your hills, you ſhall then pare up with a paring ſhovel, all the greene ſwarth quite thorow all your allies at leaſt foure fingers thicke, and with the ſwarth ſo pared up, you ſhall cover all your hills almoſt to the top, turning the greene ſwarth next unto the earth, ſo as it may rot, for that is an excellent meanure alſo. Then when your allies are all thus cleanſed of their ſwarth, you ſhall take good ſtore of Braken or Ferne, and ſtraw it al over quite thorow al the allies, that it may lie in a good thicknes, almoſt to the midſt of the hils, which having al the winter to rót in, wil not onely be an exceeding comfort to the hills, and preſerve both them and their Plants from many evills, but alſo being ſhovelled up together with the earth in the Spring time, wil be a marvellous ſtrong meanure wherewith to repleniſh the hills, and to make them to proſper exceedingly, and to ſave much other coſt and charges, as well in meanure as in carriage.

Preparing of the allies.

When your hills are thus inriched, and your allies thus prepared, you ſhall then open your hills in the tops, and ſet your plants, that is to ſay, in every hill four plants at the leaſt, being well prepared, and this ſhould be done in the moneth of *October*, and theſe plants muſt be ſet good and deepe in the earth, and covered all over, at the leaſt foure fingers thick; and if with the earth which covereth theſe Plants, you mixe Oxe-blood and Lyme, it will not onely give great comfort & nourishment to the Plants, but alſo defend and ſave the roots from worms and other vermines,

The planting of hops.

Vermines, which otherwiſe would ſeeke to deſtroy them.

After your Garden is thus planted all over, you ſhall then let it reſt till the following Spring, and about *April*, finding the ſmall Twines of your Hoppes iſſued out of the Hills, and running alongſt the ground, you ſhall then ſet up your Poales, which Poales ſo they be long and ſtraight may be of any wood you pleaſe, as either Aſh, Elme, Withy, Willow, or Sallow, and in the ſetting up of theſe poars, you ſhall have two very carefull reſpects: *Firſt, that in putting in of the poales, and faſtening them with the earth, you do not hurt the Hop-rootes, which a ſmall careleſneſſe may do, but be ſure to ſet them clear at the rootes: and that you may do it the better, and make your poales to ſtand the faſter, it is good that you have an iron auger wherewith firſt to pierce the ground, and then to put the poale in after, and ſo ram it in hard that it may not ſtirre: the ſecond care is, that you place not one poal to over-ſhadow another, but that they may ſtand ſo cleere, one from another, that which way ſoever the Sun ſhall caſt his beams, yet every plant (as it winds about the poale) may be an equall partaker of the ſame.* poleing of Hops.

This, with a ſmall obſervation in the ſetting up of the poales, may eaſily be performed: the number of poales that you ſhal ſet on every hill, muſt be anſwerable to the Syens which ſhal iſſue from the roots, allowing to every poal two Syens at the leaſt, and not above three at the moſt: theſe Syens (when your hils are poled) you ſhall with your hands twine about their ſeverall poals, and thoſe which are but new peeping from the ground you ſhal ſo fold among the other Branches, as they may of themſelvs run about the poal; and as theſe, ſo alſo all

the other twigs, which are any way derived from the main Sien, leaving not any at all to run upon the ground for that it altogether profitleſſe, and to no uſe.

Of weeding Hops. For the weeding of this barren earth thus made into an Hop-garden, there is little care to be had: for firſt the ſope aſhes wherewith the hils are meanured, the oxe bloud and the lime, are ſuch enemies to all manner of weeds, that they wil not ſuffer any to grow where they abide: Next the Braken and Fern which covereth the alleys is ſuch a poyſoner and ſmotherer of any thing that ſhall grow underneath it, that it will not ſuffer any weed to peep or ſpring up through it; yet if in any eſpecial place where neither of theſe defences come, it happen that any weeds do grow, then you ſhall with your beſt care cut them away, or pull them up, and ſo your Garden ſhall remain comely, pleaſant, and fruitfull to every proſpect.

CHAP. 21.

A generall computation of men, and cattels labours: what each may do without hurt daily.

plowing and ſowing. TO ſpeak generally of all husbandly works where the Countrey is tollerable without any extraordinary difficulty, you ſhal underſtand, that a man may well in ſtiffe ground, plow an Acre, or an Acre and an half, and in light ſand grounds two or three Acres with one Team in a day, and he may plow and ſow in ſtiffe ground two Acres and an half each day, and in light ground foure at leaſt with one Teame, and alwayes what he ſoweth, that he may harrow the ſame day alſo.

A man

A man may well mow of good and deep loggy meadow, or of rough, uneven meadow, every day one acre; mowing clean and making a ſmooth board; of wel ſtanding and good ſmooth meadow an acre, and a half each day: and of very thin and ſhort graſſe, or upland meadow two acres at the leaſt every day.

Alſo, he may mow of corn, as Barley and oats, if it be thick, loggy, and beaten down to the earth, making fair work, and not cutting off the heads of the ears, and leaving the ſtraw ſtill growing, one acre and a half in a day: but if it be good, thick, and fair ſtanding corn, then he may two acres, or two acres and a half in a day, but if the corn be ſhort and thin, then he may mow three, and ſometimes four acres in a day, and not be over-laboured: Alſo of beans he may mow as much, and of Peaſe mixt with beans, having a hook to follow him no leſſe; for they are works in this nature moſt eaſie, and leaſt troubleſome. *Mowing.*

One man with a binder may well reape an acre of Wheate, or Rye in a day, if it be principall good and well ſtanding, but if laid or beaten down with weather then three rood is fully ſufficient for a days labour, but if it be thinne and upright ſtanding, then he may reape and bind five roods in a day: of ſmall peaſe, Fetches, and ſuch like, a man may well reape two acres every day. *Reaping.*

Now foraſmuch as it is a cuſtom in divers countries (and truly is exceeding profitable and worthy in imitation) to ſheafe and bind up both Barley and Oates, as well as Wheat or Rye, and that it both ſaveth much Corn, and alſo makes it take a great deal leſſe room, and that this labour is to be done after the mowers, as the other was after the reapers, by gathering the Barley, *Binding of Barley and Oats.*

ley of Oats up without a ſickle or hook, as it lies in the ſwath, and ſo binding it in ſheaves, you ſhall underſtand that one man in a day ſhall bind as much as one mower can mowe; and if the man be any thing skifull in the labour, two binders will bind as much as three mowers can mowe.

Gathering in of Grain. For the gathering or inning of Graine, no man can proportion the number of loads, or quantity of ground ſhall dayly be brought home, ſith the journeys are uncertain, ſome going a quarter of a mile, ſome halfe a mile, and ſome a mile: therefore it is the Husbandmans beſt way, the firſt dry to go with his Teame himſelf, and both to obſerve the labour and diſtance of place, and by that to compute what may be done after, without hurt to his catle; and where he fails of any hope, there to make a ſtrict account of the error; for it is either ignorance or careleſneſſe which brings forth miſchances, ſpeaking of husbandry, as overthrowing the Team, over-loading the Team, breaking neceſſary inſtruments, or not reſpecting the ways, and paſſage, any of which may in a day hinder more then half a dayes labour.

Diteking. Again, a man may in a day, ditch, & quickſet of a reaſonable ditch four foot broad, and three foot deep, a rod or a pole a day, allowing ſixteen feet to the rod, and ſo of larger meaſure leſs ground, and of leſs ground larger meaſure, according to the ſufficiency of the fence which you purpoſe to make.

Hedging. A man may hedge alſo in a day if the hedge be good and ſubſtantiall, that is to ſay five foot high, welbound thick ſtackt, and cloſe layd, two rod in a day, and if the work be lower or thinner then double ſo much, according to the former proportion.

For

For this plaſhing of hedges, or making a quick fence if he doe it workmanly, and that the growth be high and well growne; and then he lay it thick, cloſe, and ſtrongly bound on the top, turning the Quicke downeward and inward, to plaſh a rod a day is as much as any man can well do; but if ye plaſh it after the weſt countrey faſhion, that is, only cutting it down, and laying it along cloſe to the ground, ſeeking only thickneſs, and not much guard or comelineſſe, then he may well plaſh a rod and a half in a day without trouble, and ſure in this work is great care and art to be uſed as well for the preſervation of the quick, as the goodneſſe of the fence, being a thing of worth and validity to every Husbandman. Plaſhing.

Again, a man may delve or dig, as for Garden-mould, Hemp-yard, Flax-yard, or for the ſetting of Corn, or levelling of uneven places, one rood in a day, and the ground ſo digged and delved, he may rake, dreſſe, and levell in the ſame day alſo; but if he dig it deep, and trench it, and meanure it, as is meet, either for Garden, Orchard, or Corn ſetting, then to delve half a rood in a day, is a very great proportion, becauſe ordinarily to delve, as to receive ordinary Seeds, requires but one ſpade graft in depth, but extraordinarily to delve, as for inriching and bettering of the ground, and to cleanſe it from ſtones, weeds, and other annoyances, will require two ſpade graft at the leaſt. Delving.

Laſtly, a man may thraſh if the corn be good and clean, without ſome extraordinary abuſe or poverty in the Grain, in one day four Buſhels of Wheat or Rye, ſixe buſhels of Barly or Oats, and five buſhels of Beans or Peaſe, but the Pulſe muſt then be imagined to be exceeding good, otherwiſe a man ſhall thraſh leſſe Thraſhing.

of

of it, then of any other kind of Graine, for as when it is wel loaden, it yeeldeth plentifully, ſo when it is poor and lightly loaden, it yeeldeth little or nothing, and yet hath not one ſtroke leſſe of the flaile, nor any labor ſaved more then belongs to the beſt Pulſe whatſoever, being ever at leaſt three times turned, and four times beaten over.

The particular expence of a day.

Having thus generally run over (in a ſhort computation) the labors of the Husbandman, I will now briefly as I can, go over the particular dayes labours of a Farmer or Plowman, ſhewing the particular expence of every hour in the day, from his firſt riſing, till his going to bed, as thus for example: we will ſuppoſe it to be after *Chriſtmas*, & about plow-day (which is the firſt letting out of the plow) and at what time men either begin to fallow, or to break up Peaſe-earth, which is to lye to bait, according to the cuſtome of the Countrey; at this time the Plowman ſhall riſe before four of the clock in the morning, and after thanks given to God for his reſt, and the ſucceſſe of his labours, he ſhall go into his ſtable; or beaſt-houſe, & firſt he ſhal fodder his cattle, then cleanſe the houſe, and make the booths cleane; rub down the cattle, and cleanſe their skins from all filth, then he ſhall curry his horſes, rub them with cloaths, and wiſps, and make both them and the ſtable as clean as may be; then he ſhal water both his oxen and horſes, and houſing them again, give them more fodder and to his horſe by all meanes provender, as chaffe and dry peaſe or beans, or Oat-huls, peaſe or beans or clean oats, or clean Garbadge (which is the hinder ends of any Grain but Rye) with the ſtraw chopt ſmall amongſt it according as the ability of the Husbandman is.

And

And whileſt they are eating their meat, he ſhall make ready his Collars, Hames, Treates, Halters, Mullens, and Plowgeares, ſeeing every thing fit, and in his due place, and to theſe labours I will alſo allow full two houres, that is, from four of the clock till ſixe; then ſhall hee come into breakfaſt, and to that I allow him halfe an houre, and then another halfe hour to the gearing and yoaking of his Cattle, ſo that at ſeven of the clocke he may ſet forward to his labour, and then he ſhall plow from ſeven of the clock in the morning, till betwixt two and three in the afternoone; then he ſhall unyoak and bring home his cattle, and having rub'd them, dreſt them, and cleanſed away all dirt and filth, he ſhall fodder them and give them meat; then ſhall the ſervants go into their Dinner, which allowed half an houre, it will then be towards four of the clock, at what time he ſhall go to his cattle again, and rubbing them downe, and cleanſing their ſtalls, give them more fodder; which done, he ſhall go into the Barns, and provide and make ready fodder of all kinds for the next day, whether it be hay, ſtraw, or blend fodder, according to the ability of the Husbandman.

This being done and carryed into the ſtable, oxe-houſe, or other convenient place, he ſhal then go water his cattel, and give them more meat, & to his horſe provender, as before ſhewed: and by this time it wil draw paſt ſix of the clock, at what time he ſhal come in to ſupper, & after ſupper he ſhall either by the fire ſide, mend ſhoos both for himſelf and their Family, or beate and knock Hemp or flaxe, or pick and ſtampe Apples or Crabs, for cider or verdjuice, or elſe grind malt on the querns, pick candle ruſhes, or do ſome husbandly office within doores till it be full eight a clock: Then ſhall hee

take

take his Lanthorn and Candle, and go to his Cattel, and having cleanſed the ſtalls and planks, litter them down, look that they be ſafely tyed, and then fodder, and give them meat for all night; then giving God thanks for benefits received that day, let him and the whole houſhold go to their reſt til the next morning.

Now it is to be intended, that there may be in the Houſhold more ſervants then one; and ſo you will demand of me what the reſt of the Servants ſhall be imployed in before and after the time of plowing: To this I anſwer, that they may either goe into the Barne and thraſh, fill or empty the malt-fat, load and unload the Kilne, or any other good and neceſſary work that is about the yard, and after they come from plowing, ſome may goe into the Barn and thraſh, ſome hedge, ditch, ſtop gaps in broken Fences, dig in the Orchard or Garden, or any other Out-work which is needfull to be done, and which about the Husbandman is never wanting, eſpecialy one muſt have a care every night to looke to the mending or ſharpening of the Plow-irons, and the repairing of the Plow and Plow gears, if any be out of order, for to defer them till the morrow, were the loſſe of a dayes work, and an ill point of Husbandry.

Particu'ar labors of cattel.

Now for the particular labours of Cattell, though it be already incluſively ſpoken of in that which is gone before, where I ſhew you how much a man may conveniently plow in a day with one Team or Draught of cattel, yet for further ſatisfaction, you ſhall underſtand that in your Cattell there are many things to be obſerved, as the kind, the number, and the ſoyl they labour in, for the kind which are Oxen, Buls, or Horſes, the beſt for the draught, are Oxen, and the reaſons I have ſhewed

the reasons I have shewed in my former Works, the best are Horses, and the worst Bulls, because they are most troublesome; the number fit for the Plough, is eight, sixe, or four; for the Cart, five or foure; and for the Waine, never under six, except in leading home of harvest, where loading easily, four very good oxen are sufficient; for the soile, if it be of the toughest and deepest earth, eight beasts can do no more but fallow or breake up Pease-earth, no, nor fewer stirre, if the season grow hard and dry; for soyling, winter rigging and seed furrow, six beasts may dispatch that labour: if the soile be mix'd and hassel, then six may fallow and sow Pease, and four doe every other ordure: but if it be light and easy sand, then fower is enow in every season. For the quantity of their work, an Oxe-plough may not doe so much as a Horse-plough, because they are not so swift, nor may be driven out of their pace, being more apt to surfet then horses be, so that for an Oxe-plough to do an Acre, & a horse-plough an Acre and a rood, or an Acre and an halfe in good grounds, is works fully sufficient.

CHAP. 22.

The applying of husbandry to the severall Countries of this kingdome, wherein is shewed the office and duty of the Carter or Plow-man.

IT is to be understood, that Husbandry doth vary according to the nature and climats of Countries; not one rule observed in all places, but accord ng as the earth, the aire, the much or little heat, moisture or cold doth increase or diminish, so must the skilful Husbandman alter his seasons,

sions labours and instruments; for in stiffe Clayes, a
are all the fruitfull Vales of this Kingdome (of whi
I have named most part in a Chapter before) as al
Huntington-shire, Bedford-shire, Cambridge-shire, & m
ny other of like nature, all manner of arable wor
must be begun betimes in the yeere, and the Plough
and Instruments must be of large size and strong tim
ber, and the labour great and painfull: so also in m
soiles that are good and fruitfull, as *Northampton-sh*
Hartford-shire, most part of *Kent, Essex, Bark-shire,*
Counties of like nature, all arable toiles would beg
at latter seasons, and the Ploughes and Instrume
would be of middle size, and indifferent timbers, a
the labour somewhat lesse then the other: but
light sandy grounds which have also a certaine n
rall fruitfulnesse in them: as in *Norfolke, Suffolke,* m
part of *Lincoln-shire, Hamp-shire, Surry,* and Countr
of that nature, all arable toiles would begin at the la
seasons, and the Ploughs and instruments would be
the smalleſt and lighteſt size and of the leaſt timbe
and the labour of all other is eaſieſt.

Laſtly, for the barren unfruitfull earths (of whi
onely I have written in this Booke) as is *Devon-sh*
Cornewall, many parts of *Wales, Darbi-shire, Lanca-sh*
Cheſhire, York-shire, and many other like, or wo
than they; the arable toiles would have a fit ſe
ſon of the yeare, according to the temperame
of the yeere, which if it happen earely, then y
muſt begin your labours at later ſeaſons, and
your Plough and Inſtruments, they muſt not ke
any certaine proportion, but be framed ever acc
ding to the ground, the ſtronger and ſtiffer gro
having ever the ſtrong and large Plough with Inſt
ments of like kinde, and the lighter earth a Plo

Inſtruments of more eaſie ſubſtance: as for the labour it muſt be ſuch, and no other, then that which hath beene already declared in this Booke.

The Carters office.

And hence it comes that the office and duty of every skilfull Plough-man, or Carter, is firſt to looke to the nature of the earth, next to the ſeaſons of the yeere, then to the cuſtomes and faſhions of the place where he liveth: which cuſtomes although they be held as ſecond natures amongſt us, and that the beſt reaſons of the beſt worke-men commonly are, that thus I do becauſe thus they do; yet would I wiſh no man to bind himſelfe more ſtrictly to cuſtome, then the diſcourſe of reaſon ſhall be his warrant, and as I would not have him to prejudicate in his owne opinion, ſo I would not have him too great a ſlave to other mens traditions, but ſtanding upon the ground of reaſon made good by experience, I would ever have him profit in his owne judgement.

Now the further office and duty of the Husbandman, is with great care and diligence, to reſpect in what ſort of faſhion to plow his ground; for although I have in the former Chapter ſhewed how he ſhould lay his furrowes, what depth he ſhall plow them, and how he ſhall be able to raiſe and gaine the greateſt ſtore of mould, yet is there alſo another conſideration to be had, no leſſe profitable to the Hnsbandman than any of the former, and that is how to lay your lands beſt for your owne profit and eaſe, as alſo the eaſe of your Cattell which ſhall draw within your draught; as thus for inſtance: If your arable land ſhall lie againſt the ſide of any ſteepe hill (as for the moſt part all barren earths doe) if then you ſhall plow ſuch land directly againſt the hill, beginning below and ſo aſcending ſtreight upright, and ſo downe againe and

up againe, this very labour and toiling against the hi wil breed such a bitter wearisomnesse to the cattel, a such a discouragement, that you shall not be able t compasse one halfe part of your labour: besides, th danger of over-heating and surfeiting of your beasts whence will spring many mortall diseases: Therefor when you shall plow any such ground, be sure ever t plow it side-wayes overthwart the hill, where you beasts may tread on the level ground and never direct ly up and downe, so shall the compasse and meanu which you lay upon the ground not be so soon wash away from the upper part of the ground, because th furrowes not lying streight down in an even descen but turned crosse-wayes upward against the hil, it mu necessarily hold the soile within it, and not let it wa away.

Of cattell for draught.

Againe, it is the office of every good plow-man t know what Cattell are meetest for his draught; a whether Oxen or horse, or both Oxen and Horse wherein is to be understood, that although of a draughts whatsoever within this Kingdome, the is none so good to plow withall, both in respe of the strength, stability, indurance, and fitnes for labour, as the Oxen are, in whome there is sel dome or never any losse, because whensoever his ser vice faileth in the draught, his flesh will be of goo price in the shambles; yet notwithstanding in th case a man must necessarily binde himself much t the custome of the Country, and fashion of his neigh bours; for if you shall live in a place where fuell i scarce, and farre to be fetch'd, as commonly it is in a barren Countreyes, which, for the most part, are stou Champaines, or cold mountaines; and your neighbou as well for the speed of their journies, as for the leng

ke

keep horſe draughts: in this caſe alſo you muſt do the like, or elſe you ſhal want their company in your journy, which is both diſcomfort and diſprofit, if any miſchance or caſualty ſhal happen, or being inforc'd to drive your oxen as faſt as they do their horſe, you ſhall not onely over-heat, tire, bruiſe, and ſpoil them; but alſo make them utterly unfit either for feeding or labour: and therefore if your eſtate be mean, and that you have no more but what neceſſity requires, then you ſhal ſort your Plow or Teeme according to the faſhion of your Country, and the uſe of your neighbours: but if God have bleſt you with plenty then it ſhall not be amiſſe for you to have ever an Ox-draught or two, to till your Land; and a horſe draught to do all your forraign and abroad buſineſſes: ſo ſhall your work at home ever go conſtantly forward, and your outward neceſſary proviſions never wanting. Now for the mixture of Oxen, and horſe together, it falleth out oftentimes that the Plowman of force muſt be provided with catle of both kind, as if he happen to live in a rocky Country, where the ſteepneſſe of the hills, and narrowneſſe of the ways, will neither ſuffer Cart, Wain, nor Tumbrell to paſſe; in this caſe you ſhall keep Oxen for the plow, to till the ground with, and horſes to carry pots and hookes: the firſt to carry forth your meanure, and the other to bring home your hay and Corn harveſt, your fuel and other proviſions, which are needful for your family, as they do both in cornwall, and other mountainous countries, where carts and wains, and ſuch like draught, have no poſſible paſſage.

Again, it is the office and duty of every good Plowman to know his ſeveral labours, for every ſeveral Moneth through the whole yeare, whereby no day nor

hour may be miſpent, but every time and ſeaſon employed according as his nature requireth: as thus for example.

January. In the moneth of *January*, the painfull Plowman, if he live in fertile and good ſoyles, as among rich, ſtiff, ſimple clayes, he ſhall firſt plow up his Peaſe earth, becauſe it muſt lie to take bait before it be ſown; but if he live in fruitfull well mixt ſoyles, then in this moneth he ſhall begin to fallow the field he will lay to reſt the year following; but if he live upon hard barren earths (of which chiefly I write) then in this moneth he ſhall water his *Meadowes* and *Paſture grounds*, and he ſhall drain and make dry his arable grounds, eſpecially where he intends to ſow Peaſe, Oats, or Barley, the ſeed time following. Alſo he ſhall ſtub up all ſuch rough grounds as he intends to ſow the yeer following, and ſhal meaſure and trim up your Garden moulds, you ſhall comfort with meanure, ſand, or lyme, or all three mixt together, the roots of all barren fruit trees: and alſo cut down all ſuch timber, onely there will be loſſe in the bark, for the time is ſomewhat too early for it to riſe. Laſtly, you may tranſplant all manner of Fruit trees, the weather being open, and the ground eaſie: you may rear Calves, remove Bees, and for your own health keep your body warme, let good dyet and wholeſome be your Phyſitian, and rather with exerciſe then ſauce, encreaſe your appetite.

February. In the moneth of *Febuary*, either ſet or ſow all ſorts of Beanes, Peaſe, and other Pulſe, and the ſtiffer your ground is, the ſooner begin your work, prepare your garden mould, and make it eaſie and tender, prune and trim all ſorts of Fruit trees from moſſe, cankers, and all ſuperfluous branches; plaſh your hedges, and

lay

lay your quickſets cloſe and intire together; plant Roſes, Gooſeberries, and any fruit that growes upon little buſhes; graft at the latter end of this moneth upon young and tender ſtockes, but by all meanes overlade not the ſtockes.

Laſtly, for your health, take heed of cold, forbeare meats that are ſlimy & phlegmatick, and if need require either purge, bathe, or bleed, as Art ſhall direct you.

In the moneth of *March*, make an end of ſowing of all ſorts of ſmall Pulſe, and begin to ſow Oats, Barley, and Rye, which is called *March-Rye*; graft all ſorts of Fruit trees, and with young Plants and Syens repleniſh your Nurcery; cover the roots of all trees that are bared, and with fat earth lay them cloſe and warm: if any tree do grow barren, bore holes in the root, and drive hard wedges or pins of Oak wood therein, and that will bring fruitfulneſſe; tranſplant all ſorts of Summer flowers, and give new comfort of meanure and earth to all earely outlandiſh flowers, eſpecially to the *Crown Emperiall*, *Tulippos*, *Hiacinth*, and *Narciſſus*, of all ſhapes and colours, cut downe Under-wood, for fewell and fencing, and look well to your Ewes, for then is the principall time of yeaning. March.

And laſtly, bathe often, and bleed but upon extremity, purge not without good counſell, and let your Dyet be cool and temperate.

In the moneth of *Aprill*, finiſh up all your Barley ſeed and begin to ſow your Hemp and Flax: ſow your Garden ſeeds, and plant all ſorts of hearbs; finiſh grafting in the Stock; but begin your principall inauguration, for then the Rynd is moſt plyant and gentle: open your Hives, and give Bees free liberty, leave to ſuccour them with food, and let them labour for their living. April.

Now cut down all great Oak-timber, for now the bark will riſe, and be in ſeaſon for the Tanner. Now ſcowr your ditches, and gather ſuch meanure as you make in the ſtreets and high-ways, into great heapes, togethe; lay your meadows, ſleight your corn-ground, gather away ſtones, repair your high-waies, ſet Oziers and willows, and caſt up the banks and mines, of all decayed fences.

Laſtly, for your health, either purge, bathe or bleed, as you ſhall have occaſion, and uſe all wholſom recreation, for then moderate exerciſe in this moneth, there is on better Phyſick.

May. In the month of *May*, ſow barley upon all light ſands and burning grounds, ſo likewiſe do your Hemp and Flax, and alſo all ſorts of tender garden ſeeds, as are Cucumbers and Mellons, & all kind of ſweet ſmelling herb and flowers; Fallow your ſtiff clays; ſummerſtir your mixt earth, and foyl all light and looſe hot ſands: prepare all barren earth for wheat and Rye, Burn bait, Stub groſſe or Furs, and root out broom and Fern; begin to fold your ſheep, lead forth meanure, and bring home fuell and fencing, weed your winter corn, follow your common works, and put all ſorts of graſſe, either in paſture or teather: put your mares to the horſe, let nothing be wanting to furniſh the Dairy: and now put off all your winter fed fat cattell, for now they are ſcarceſt and deareſt, put young Steares and dry Kine now to feeds at freſh graſſe, and away with all peaſe-fed ſheep for the ſweetneſſe of graſſe mutton will pull down their prices.

Laſtly, for your health, uſe drink that will coole and purge the blood, and all other ſuch phiſicall precepts, as true art ſhal preſcribe you: But beware of Mountebank

tebanks and old wives tales, the latter hath no ground, and the other no truth, but apparent cosenage.

In the moneth of *June*, carry sand, marle, lime, and meanure of what kind soever to your land; bring home your coales and other necessary fuell fetcht farre off, shear early fat sheep, sow all sorts of tender hearbs, cut rank low medowes, make the first return of your fat cattle, gather early summer fruits, distill all sorts of plants and hearbs whatsoever. June.

And lastly, for your health, use much exercise, thin dyet, and chaste thoughts.

In the moneth of *July*, apply your hay harvest, for a day stackt is many pounds lost, chiefly, when the weather is unconstant, shear all manner of field sheep, Summer stir rich stiffe grounds, toile all mixt earths, and latter soyl all loose hot sands, let hearbs you would preserve now run to seed, cut off the stalkes and outlandish flowers, and cover the roots with new earth, so well mixt with meanure as may be, sell all such Lambs as you feed for the butcher, and still lead forth sand, marle, lime, and other meanure; fence up your Copses, graze your elder under-woods, and bring home all your field timber. July.

And lastly, for your health, abstain from all Phisick, bleed not, but upon violent occasion, and neither medle with wine, women, nor other wantonnesse.

In the moneth of *August*, apply your Corne-harvest, shear down your wheat and Rye, mowe your barley and oats, and make the second returne of your fat sheep and cattle; gather all your summer greater fruit, plumbs, apples, and peares; make your Summer, or sweet Perry and Cider; set slips, and Syens of all sorts of Gilly-flowers, and other flowers, and transplant them August.

that were ſet the ſpring before: & at the end of this moneth begin to winter-rig all fruitfull ſoyls whatſoever, geld your Lambs, carry meanure from your Dove-coats, and put your Swine to the early or firſt maſt; And laſtly for your health, ſhun feaſts and banquets, let Phyſick alone, hate wine, and only take delight in drinks that are cool and temperate.

September. In the moneth of *September*, reap your peaſe, beanes, and all other pulſe, making a finall end of your harveſt; now beſtow upon your Wheat land your principall meanure, and now ſow your wheat and rye, both in rich and in barren climats; now put your ſwine to maſt of all hands, gather your winter fruit, and make ſale of your wool, and other ſummer commodities; now put off thoſe ſtocks of **Bees**, you mean to ſell or take for your own uſe, cloſe thatch, and dawb'd warm, all the ſurviving hives, and look that no Droans, Mice, or other Vermine be in or about them; now tharch your ſtacks and reeks, thraſh your Seed, Rye, and Wheat, and make an end with your Cart of all forraign Journeyes.

October. Laſtly, for your health, in this moneth, uſe Phyſick but moderately, forbear fruits that are too pleaſant or rotten, and as death, ſhun Ryot and Surfeit.

In the moneth of *October*, finiſh up your Wheat ſeed, ſcowr Ditches and Ponds, plaſh and lay hedges and quick-ſet, tranſplant, remove, or ſet all manner of fruit-trees, of what nature or quality ſoever; make your *winter cyder* and *perry*, ſpare your private paſtures, and eat up the corn fields and commons, and now make an end of Winter ridging; draw furrowes to draine, and keep dry your new ſown Corn, follow hard the making of your Malt, rear all ſuch calves as ſhall fall, and wea-

wean those foals from your draught mares, which the spring before were foaled: now sell all such sheep as you will not winter, give over folding, and separate Lambes from the Ews, which you purpose to keep for your own stock.

Lastly, for your health, refuse not any needfull Physick at the hands of the learned Physitian, use all moderate sports, for any thing now is good, which reviveth the spirits.

In the moneth of *November* you may sow either wheat or Rye in exceeding hot soyles, you may then remove all sorts of fruit trees, and plant great trees, either for shelter or shadow: now cut down all sorts of timber, for plowes, carts, axeltrees, naves, harrowes, and other husbandly offices, make now the last return of your grasse fed cattle; bring your swine from the mast, and feed them for slaughter, rear what calves so ever fall, and break up all such Hemp and Flax as you intend to spin in the winter season. November.

Lastly, for your health, eate good, wholesome, and strong meates, very well spiced and dresst, free from rawnesse, drink sweet Wines, and for distestion ever before cheese prefer good and moderate exercise.

In the moneth of *December*, put your sheep and swine to the Pease Reekes, and fat them for the slaughter and market; now kill your small Porkes, and large bacons, lop hedges & trees, saw out your timber for building, and lay it to season, and if your land bee exceeding stiff, and rise up in and extraordinary furrow then in this moneth beginne to plow up that ground December.

whereon you mean to sow clean beans only, now co
your dainty fruit trees over with canvase, and hide
your best flowers from frost and stormes, with ro
old horse-litter; now drain all your corn-fields, an
occasion shall serve, so water and keep moist your
dowes, now become the fowler with peece-nets and
manner of Engin; for in this moneth no fowl is ou
season: Now fish for the carp, the Bream, Pike, Te
Barbell, Peal and Salmon.

And lastly, for your health, eat meats that are hot
nourishing: drink good wine that is neat sprighty
lusty, keep thy body wel clad, and thy house warm,
sake whatsoever is flegmatick and banish all care fr
thy heart, for nothing is now more unwholsome, t
a troubled spirit.

Many other observations belong unto the office
our skilful Plowman, or Farmer; but since they ma
imagined too curious, too needless, or too tedious, I
stay my Penne with these already rehearsed, a
think to have written sufficiently, touching
the appplication of grouuds and office
of the Plow-man.

The end of Markham's *farewell to Husbandry.*

FINIS.